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ABSTRACT

This paper examines the impact of parental involvement on the overall condition of the Washington (District of Columbia) public school buildings, and then looks at the impact of various variables on student achievement. Regression analysis shows the relationship among building conditions, parental involvement, and student achievement. Although a complete set of data on all schools was not obtained, a sampling of 52 schools indicates that the size of a school's Parent Teacher Association (PTA) budget is positively related to the condition of the school building. The relation between the PTA budget per pupil and the overall condition of the school building was statistically significant at the 0.07 level. The condition of the building is related to academic achievement, and improvement in the condition of the building is associated with improvement in achievement scores. The policy implications of these results are discussed. Although actions such as the support of parents' organizations appear to contribute to maintaining the school in good condition, capital outlays to improve the basic condition of the schools may contribute to student achievement. There are six tables presenting study data. Three appendices contain data about the schools, correlation analysis results, and regression results. There is an 96-item list of references. (SLD)

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Building Conditions, Parental Involvement and Student Achievement in the D.C. Public School System

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Maureen M. Edwards

This paper is in partial fulfillment of requirements
for the Masters of Public Policy.

The researcher would like to acknowledge with appreciation
the assistance of Parents United, the law firm of Steptoe and Johnson,
the D.C. Public Schools, Ms. Connie Spinner of the Office of Parental
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Program of Georgetown University.

Any error is the sole responsibility of the author.

This paper is dedicated to my family, in particular my mother, who has
provided me with love and support throughout
my own education.

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Abstract

This paper examines the impact of parental involvement on the overall condition of the Washington D.C. public school buildings, and then in turn looks at the impact of various variables, including the condition of the buildings, on student achievement. Regression analysis is used to show the relationship between these three factors. Although a complete data set on all schools was not obtained, the results from a sampling of schools indicate that the size of a school's PTA budget is positively related to the condition of a public school building. The relationship between the PTA budget per pupil and the overall condition of the school building was found to be statistically significant at the .07 level. It is also found that the condition of the building is, in turn, shown to be statistically related to the academic achievement of the students. An improvement in the condition of the school by one category, say from poor to fair, is associated with an improvement in average academic achievement scores of 5.5 percentage points.

These results have important policy implications. The relationship between a student's environment and his/her academic achievement has long been assumed, but little rigorous research has been done on the need to repair and refurbish buildings because of the impact on the students, rather than just the need to maintain the capital investment of the local government. Although actions such as the support of parents' organizations appear to contribute to maintaining a school in good condition, capital outlays to improve the basic condition of our schools may contribute to students' achievement.

I. Introduction

The current state of school buildings in the District of Columbia is alarming. Problems range from toilet stall doors missing in restrooms and numerous broken windows to non-functioning fire alarm systems and entire buildings recommended for closing. Although there are numerous areas that deserve attention in education -- such as the need for an improved curriculum, better teaching and administrative structures, and incentive systems -- the renovation of school buildings is one area where the problem is severe, and the solution is obvious and direct. Before committing funding to address the need to renovate the nation's educational infrastructure, however, it would be helpful to identify the factors that contribute to poor building conditions, or to identify what factors lend themselves to improving building conditions. It would also be helpful to identify what impact building conditions have on student achievement. This study investigates the hypothesis that extrinsic factors, such as the socio-economic environment of the school or the active involvement of parents can influence the condition of the public school buildings. It is also hypothesized that the building condition in turn affects student achievement.

For example, an active PTA could influence the condition of the local elementary school by: applying pressure on the local elected officials to push for funding from the city; directing their own energies to improving the situation such as volunteering to monitor and clean the playground each day; funding improvement projects directly; and/or funding other activities that indirectly affect the other methods, such as supporting a political candidate or educational measures. (Interview with Ms. Connie

Spinner, 1990). Parents can push schools to adhere to the basic standards of safety, privacy, and cleanliness that we employ in other areas of our lives, but which are currently lacking in many public school buildings. The resulting condition of buildings can affect the students' perception of their own self-worth, the value placed on their education by society, and future prospects for attaining a better standard of living.

Conditions in Washington, D.C. are indicative of the situation in many urban school situations. The local press has been active in focusing on some of the problems existing in the D.C. Public School system. For example, one recent article noted:

> Even minor projects bring extreme delays. For three years, the PTA at Gibbs Elementary School has asked the school system to fix the water fountains, none of which worked. This spring, one fountain was replaced, but the parents are having no luck with another demand that dates back several years: they want doors put on the restroom stalls. (Sanchez, May 15, 1989)

The problems are not limited to elementary schools, or to schools in the high crime areas of Washington. Another article notes that problems are found elsewhere:

> Sometimes its so cold at Langley Junior High School in Northeast Washington that 13-year old Anthony Cardwell has to snuggle inside his coat to keep warm during his classes. At other times, it's so hot that it makes his nose bleed. (Armstrong, Dec. 20, 1989)

The above examples relate to what is one of the most pressing problems of current urban schools systems. A person's environment can affect his/her day-to-day achievement. Schools are no exception. It is unreasonable to expect positive results from programs, educational or otherwise, that operate in negative physical environments. When schools are allowed to deteriorate to the point of having classrooms with falling ceiling plaster, chained fire doors, and non-functioning bathrooms, students question

whether society really places a value on them or on education. Deteriorating infrastructure in schools is not just an urban problem, although some of the worst cases can be found in cities. School systems around the country have deferred vital maintenance expenditures. In 1982, a joint report of the American Association of School Administrators (AASA), the Council of Great City Schools and the National School Boards Association conservatively placed the accumulated cost of repairing the nation's public elementary and secondary schools at $25 billion in then current dollars. (AASA et al., 1983, p. 1)

Extensive research has been done on efforts to improve our educational system through changes in curricula, privatization, and organizational and administrative changes. In much of the literature on the subject, the need to address deteriorating infrastructure often seems to be an afterthought in proposals for educational reform, although it can be by far the most costly. The need to address infrastructure is not a glamorous issue; it causes little political dispute beyond the estimates of costs and sources of funding. Repairs have been needed for decades and will continue to be an important funding issue in the future. This is one issue where government could "throw money at the problem" and achieve immediate, direct results. By delaying these decisions, costs will not only increase with inflation, but can lead to the need for further repairs.

II. Literature Review and Issue Background

National Studies

Education currently comprises the largest public enterprise nationally, with schools involving more people, either through services or employment, and more buildings than any other public institution. (AASA et al., p. 2) The deterioration of the infrastructure of the school systems has been mentioned by a wide variety of non-profit organizations and associations, although little statistical research on this subject or in-depth studies of the impact of this situation on student achievement have been done. Although the condition of schools and the role of parents in this issue have been discussed in a descriptive sense in the popular press, more specialized literature on these two subjects is sparse, and usually limited to professional discussions of the facilities in industry publications, or to national reports sponsored by educational or advocacy organizations.

The role of parents in children's learning processes has been more fully covered. Parental involvement has been cited as important to the education and development of children, especially less advantaged children. (CED, 1987, p. 49) Phillips and Rosenberger (1983, p. 30), in the Bulletin of the National Association of Secondary School Principals (NASSP), cite research indicating that academic achievement of students can be increased as much as 35% with parental involvement. (Phillips and Rosenburger, 1983, p. 30)

One of the few academic studies, the report Equality of Educational Opportunity, better known as the Coleman Report, found that a variety of factors are

important in predicting educational achievement. The report found that variations in facilities accounted for relatively little variation in achievement as measured by standardized test scores. (CED, 1971, p. 55)

However, in later reports in this literature survey, the possible detrimental effect of poor facilities on the attitude of students and teachers was emphasized. In January, 1983, the American Association of School Administrators, the Council of Great City Schools, and the National School Boards Association produced a joint report titled The Maintenance Gap: Deferred Repair and Renovation in the Nation's Elementary and Secondary Schools. This report compiled the results of a survey of 100 schools systems, ranging from very large school systems (such as the New York City school system with an annual budget exceeding $3.2 billion and more than 1000 facilities to maintain) to some relatively smaller school systems (such as the Elizabethtown, Tennessee school system with a budget of only $5.0 million). Inner-city, rural and suburban school districts were included. The report identified six major causes of the huge backlog in maintenance:

- First, school budgets were depleted in the late seventies due to rapid increase in energy prices. Funds to replace outdated heating systems, such as the fuel oil systems common in northeastern schools, were diverted to deal with operating budgets.

- Second, state tax and expenditure limitation measures constrained the ability of the public schools to raise revenue. Capital outlays and structural

maintenance were delayed in favor of higher priority functions, such as instruction.

• Third, many of the buildings are quite old. Twenty percent of America's public school buildings, particularly those in older cities, were built before 1920. Seventeen percent of Chicago's schools were built before 1900, and many of those shortly after the Chicago fire in 1870. Although many of the older structures are in better shape than newer buildings, the sheer age of schools can require complete replacement of electrical and plumbing equipment. In terms of newer buildings, the report states that modular structures built in the 1950's were intended to accommodate the baby-boom, and were not meant to last over thirty-five years. If the older schools of the 1920's and the hastily built schools of the 1950's are to remain serviceable in the future, immediate renovation needs to be done.

• Fourth, schools experience a higher degree of wear and tear and vandalism than other public buildings. Security measures needed in the urban school systems are an additional drain on resources.

• Fifth, population changes have resulted in cutbacks on capital spending. "With the decline in enrollments, school construction and repairs essentially stopped in 1970." (AASA, 1983, p. 5)

- Sixth, stricter health and safety requirements on both the state and federal level have drained limited resources. The need to perform costly asbestos abatement to comply with safety regulations is one example of the demand on limited resources.

The report, published in 1983, found that the total cost for the backlog of repair needs would be $25 billion. The report concludes that although schools are under pressure to improve curriculum and instruction, safety and operating efficiency are also essential.

> The data clearly show that schools throughout the nation, particularly those in the older inner cities, have deferred billions of dollars of repairs. The bill for postponing this maintenance has come due and will only increase in time. (AASA, 1983, p. 13)

In 1987, the Council of the Great City Schools released a report titled Challenges to Urban Education: Results in the Making. This report notes that many of the new teaching and curriculum initiatives or program improvements currently recommended create pressure on existing space and facilities. (Council of Great City Schools, 1987, p. 51) The success of some of the options for educational reform rely on the ability to accommodate the programs -- an accommodation that currently many schools cannot provide.

The Carnegie Foundation for the Advancement of Teaching identified educational facilities as one of the priorities for renewal for educational excellence in their report, An Imperiled Generation: Saving Urban Schools, published in 1988. The report was complied from a series of visits to urban schools and a national survey. The report

acknowledged that a good building does not necessarily make a good school, but points out that students' attitudes towards education, and therefore the prospect for educational success, are a reflection of their environment. The report notes: "...[T]he tacit message of the physical indignities in many urban schools is not lost on students. It bespeaks neglect, and students' conduct seems simply an extension of the physical environment that surrounds them." (Carnegie Foundation, 1988, p. 35) Interestingly, the Carnegie Foundation mentions the state of urban school libraries, where the libraries have served more often as detention centers than as learning environments. They conclude that quality education does not require a luxurious setting, but neither can it be accomplished in a setting of neglect. (Carnegie Foundation, 1988, p. 39)

The Education Writers Association (EWA) also completed a study of this subject. Wolves at the Schoolhouse Door: An Investigation of the Condition of Public School Buildings, finished in 1989, compiles the findings of information gathered on one half of the public school buildings in the United States. The EWA found that 25% of the nation's school buildings were "shoddy places for learning" (EWA, 1989, p. 1) They also discovered that there is generally a lack of information on facilities nation-wide. At the time of the report, there were 88,021 public school buildings, needing $84 billion in new or retro-fitting construction and $41 billion for maintenance and repairs. (EWA, 1989, p. 4) Although one fifth of the structures in use are over 50 years old, few school districts are investing the 2-4% of replacement value in annual maintenance that is recommended. The amount invested is often below the amount spent by the private sector (3.5%), but comparable to that spent by other public sector areas. (EWA, 1989, p.

4)

The report stated that the percentage of school budgets spent on maintenance was 11% in 1950, but it has dropped steadily ever since. In 1986, it was down to 3.3% in major cities. The report also cited findings of the Council of Great City Schools, which estimates that 85% of maintenance budgets goes for emergency repairs, not routine maintenance.

In discussing the underpinning of the system, EWA used descriptive data and information from interviews to highlight the main problem areas of deferred maintenance. The first problem area is the school's basic construction. Buildings built before World War II (20% of all schools) have solid construction, yet require major repairs to electrical, heating, and plumbing systems. Schools built in the 1950's to 1960's to service the baby-boom population were built with only an average 35-year life-span. State building standards vary greatly, and can allow glaring problems to exist and grow. For example, a loophole in the Wisconsin state building code currently allows 300 schools to be considered safe if they met standards set during World War I.

Growth is another problem area, according to the report. When metropolitan fringe areas experience rapid growth, there is an increased demand to use existing but out-dated facilities, to use portable facilities, and to hastily address new construction needs. Routine maintenance is the third problem area, with the maintenance budget being the first to be sacrificed in funding controversies because of the belief that costs can be deferred indefinitely. Unfortunately, deferring routine maintenance can cause long-term costs to spiral. The EWA report noted the difference in current versus future

costs:

> Timely patching and recoating of roofs would save school districts considerable money. According to Allan, (Ron Allan, director of the Physical Plant Division for the Milwaukee public schools) immediate repairs cost about $1.30 a square foot. When such repairs are delayed, the roof must inevitably must be torn off and replaced, at a cost of $4.60 a square foot or more. (EWA, 1989, p. 18)

Safety is a fourth problem area, with public concern focusing on a variety of safety issues. EWA primarily focuses on the issue of asbestos removal, and points out that school districts have been required to perform training, inspection, and removal duties, initially beyond their capacity.

District of Columbia Studies

The District of Columbia school system has an approximate enrollment of 83,000 students. The school system is currently responsible for 191 educational facilities, used for elementary, secondary, high school and community education. Public school enrollment is approximately ninety percent black, four percent white, and six percent other minorities (Asian, Native American, and Hispanics). The highest level of enrollment for the system was 152,000 in 1968. Private schools account for approximately fifteen percent of the District's enrollment. (COPE, 1989, p. 25) It is estimated that forty percent of students drop out. It is also estimated that sixty percent of that amount is male.

In terms of academic performance, in 1987 the system-wide grade point average on the high school level was 1.73. Of the national achievement tests, D.C. currently uses the Comprehensive Tests of Basic Skills (CTBS). In 1990, in the elementary schools, D.C. scores slightly above the national norm of the CTBS, but the scores fall off

significantly in the 8th grade (41st percentile) and in the 11th grade (40th percentile). (D.C. Public Schools, 1990, p. 1) The D.C. Public School system has severe problems that it must address, not only in terms of dropout rates and poor scores, but in developing an efficient and effective school system in a city comprised of dichotomies: professional and personal wealth and power, and unemployment, drugs and poverty.

In mid-1988, at the behest of the Superintendent of Schools, Dr. Andrew Jenkins, and the Board of Education, the D.C. Committee on Public Education (COPE) was formed to make an intensive examination of all aspects of the D.C. public school system. The committee was comprised of 64 individuals representing business, professional, religious, academic, community, parental and educational interests. The purpose of the committee was to develop a long-range plan to improve the D.C. educational system, in conjunction with Dr. Jenkins and the Board of Education. The main result of their work was a report entitled Our Children, Our Future: Revitalizing the District of Columbia Public Schools, which outlines a series of recommendations to be implemented over a five-year period. In 1983, the total estimated cost of deferred expenditures, both capital outlays and deferred compliance with federal and state health and safety requirements, was $30 million. (AASA, 1983, p. 30) The committee examined the condition of the educational facilities in 1989 and found that the total repair cost of deferred maintenance now exceeds $150 million, with an additional $30 million needed if the system were to provide air conditioning for summer programs as recommended. (COPE, 1989, p. 5.)

One of the main educational concerns that the report addressed was the need for

better facilities. The committee gathered data from five sources: 1) a series of town meetings where it heard testimony from parents, students, teachers and administrators, 2) a survey of 1,200 teachers about their working conditions, and how the school environment affects the mission of the schools, 3) volunteer teams of engineers, architects, builders, construction workers, developers and maintenance personnel who visited each school to conduct a comprehensive facilities review, 4) information provided by the D.C. Public Schools, and 5) operational reviews and planning documents prepared by consultants such as Peat Marwick Main & Co.

At the time of the report, the D.C. school system had 199 facilities, with an average age of 50 years. The total assessed value of the facilities was more than $900 million, although market value exceeded that amount, primarily due to schools with commercially attractive downtown locations. The committee found that there is excess capacity in the school system, primarily on the elementary and secondary levels.

In terms of the overall condition of the facilities, the committee found that the system is in poor condition, listing problems common to urban schools: leaking roofs, ceiling and walls with significant water damage and crumbling plaster, heating systems whose controls do not function, bathrooms with missing partitions, and electrical systems that do not work. The committee found that there was a distinct problem with the management of the maintenance problems - the current system of repair requests and fulfillment simply does not function adequately. Between 1986-1989, out of an estimated 21,295 work orders placed by the schools, only 3,559 were completed, with an average of 3 to 6 months of response time needed. Although the main recommendations of the

report are to be discussed below, it is interesting to note that the first step they suggest is to provide schools with soap/detergent, floor wax, light bulbs, and paper hand towels - things most people normally take for granted. After examining the condition of the school system, the committee concluded that the message being given to students is that

> what is going on inside is not important, that the school system is uncaring, and that neglect is tolerated. A building in poor repair contributes to the attitude and discipline problems among students, which in turn contributes to poor performance in schools. Hence, as a community, we must, at a minimum, provide our teachers and students with facilities that are decent and safe. (COPE, 1989, p. 129) (emphasis added)

School officials did move on one of the major recommendations of the report - the closing of seven schools with low enrollment. (Sanchez, April 10, 1990) Although the prospects for the success of the COPE report were favorable at the time of its release, little other progress has been made. As with other school districts, the primary factor in addressing the problems of the facilities is the availability of funds.

In February, 1990, the school board requested a $100 million increase to address a variety of needs, including the need to renovate or repair the school buildings. Former Mayor Marion Barry supported the increase and placed the burden of cutting that request on the shoulders of the City Council. (Sanchez, February 8, 1990)

A number of issues then arose which made the position of support for the school budget tenuous. Credibility, accountability and voter support are essential to winning a favorable allocation. The most damaging incident to the D.C. school system in 1990, the year following the release of the COPE report, was an over-count of the school enrollment of several thousand students, and the subsequent failure on the part of the school administration, particularly School Superintendent Jenkins, to inform the City

Council. (Sanchez, March 8, 1990) Most often, school budget requests are based on the number of students currently enrolled. When the D.C. City Council found that this number had been overestimated in the current request by thousands of students, as well as possibly overestimated in past requests, the credibility of the school superintendent's office waned, and with it hopes of obtaining the level of funds originally requested. Council members reacted against this scandal by cutting the school budget. "Council members angrily cut the school's budget request..., shelving plans to renovate classrooms..." (Sanchez, March 11, 1990) As is commonly the situation in urban school districts with competing needs, the maintenance budget is often the first to be cut. (Council of Great City Schools, 1987, p. 50)

The primary source of parental advocacy appears to be an organization called Parents United for the D.C. Public Schools, a city-wide advocacy group that has been pressuring the school system and the city as a whole to address the issue of school building deficiencies, most actively through legal action.[1] Parents United has been primarily vocal about the issue of fire safety violations, and through the Freedom of Information Act, obtained past fire inspection reports on D.C. public school buildings. Parents United has been pursuing the need to correct the fire code violations, and has recently threatened the city with civil lawsuits if the violations are not corrected. The city Fire Department has not forced the school system to action with fines or closing,

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[1]Usually in a school system there is a PTA structure that supports issues such as increased funding for the school system. Repeated attempts to contact the D.C. Congress of PTAs for information for this study were unproductive. The D.C. Congress of PTAs would not, or could not, provide information as to the membership, budgets, or activities of the D.C. PTAs.

which is within their purview, although it did reject Superintendent Jenkins' request to suspend certain fire codes for two years.

Parents United has collected data on those violations, and has issued several reports on the conditions of the D.C. public schools in order to raise awareness of the community and spur reaction by the school system. The latest report, Parents United for D.C. Public Schools Investigation Report on School Building Conditions, focused on the threat of fire safety violations. Parents United believes that funding should be allocated to address these problems. They blame the current serious nature of the conditions at the schools on indifference and mismanagement on the part of top school officials. (Parents United, 1991, p. 6) The report also acknowledged that the increased publicity on the issue of building conditions has resulted in increases in appropriations for the 1991 fiscal year. The school system received $10 million in a pay-as-you-go capital appropriation from the Washington, D.C. government and $12 million from the federal government to address these problems. Unfortunately, the report also notes that this is merely a beginning to the funding necessary to complete repairs, there is no comprehensive plan to use these funds, and no repairs have yet begun. (Parents United, 1991, p. 8)

An office which has dealt indirectly with the condition of the public schools in D.C. is the Office of Parental Involvement of the D.C. Public School system. The director of the office, Ms. Connie Spinner, pointed out that the condition of school is one of the rallying points for parents. Building condition is an obvious reflection of the quality of the school. Whereas parents have more difficulty in readily identifying a

problem with curriculum or school finance, rotting window frames, non-functioning bathrooms and chained-shut fire doors are obvious and alarming problems. Parents can easily identify the problem, and unlike some other educational issues, they can easily identify the solution: fix it.

Mrs. Spinner identified two ways in which parents in Washington become involved. On the east side of the city, parents are more inclined to respond to problems with grass-roots organizing, such as marches or protests. On the west side of the city, parents use different political processes.

> The parents will notice a leak at the school. They call the principal. The principal places a work order in, makes the necessary phone calls, and nothing gets done. The principal speaks at a PTA meeting about his lack of success, and several parents start to call their representative school board member. When the school board member gets ten phone calls, they call the city to put pressure on the central administration office to correct the problem. The central administration, if it receives enough pressure, responds and the leak may be fixed. (Interview with Mrs. Spinner, January 2, 1991)

It is the importance of parental involvement that led COPE to commission a study of parental involvement in the D.C school system by the Urban League. According to the report, parental involvement is defined as "the incidental and/or intentional participation of parents, guardians and/or adult caretakers in the activities, programs and decision-making associated with one or more schools. This participation has as an outcome the enhancement of student, school or district performance, and should positively influence both students and school staff." (Draft report, D.C. Office of Parental Involvement, October, 1990) The study is to provide statistical data useful in the development of the policy and programs relating to parental participation in D.C. Public

Schools. To accomplish this task, 52 schools were surveyed on a variety of questions. Initial findings show that the perception of parents as supporters rather than participants in their children's education is prevalent. (D.C. Office of Parental Involvement, October, 1990, p. 7) The results of this survey supply several variables that are included in the model presented below.

III. Hypothesis

This research investigates the hypotheses that the condition of public school buildings in the D.C. Public School System is affected by parental involvement and that the condition of the school buildings in turn affects student achievement.

The logical basis for the first hypothesis is that external factors can have an effect on the educational system. One of the most powerful external factors to a public service system is the constituent population. Since the primary constituent population in this case is not able to fully utilize its political power (they are too young), the parents take on the role of the primary constituents. Parents can influence the educational system in a variety of ways, from attending school functions, to voting for a candidate who has certain educational beliefs, to withdrawing their children from the public school system. Since a school building in poor condition is an obvious indicator of the service that constituent is receiving, one can expect parents to try to influence the system to improve the situation.

The basis for the second hypothesis is the belief that a student's academic achievement can be affected by his/her environment. The factors which influence a student's learning environment and his/her learning process are multiple. Good

nutrition, the family situation, and the quality of the teaching staff are all important influences on a student. In all the reports mentioned above, there was also an underlying belief that the student's environment at the school has an important impact on the learning process. Students must have indicators that education is valued in our society. A deteriorating building does not reflect this value. Therefore, students in a run-down school building will experience a negative effect on their academic performance. It is logical to assume that students in buildings in poor condition will have lower achievement scores than those in better maintained buildings. The second part of this study will test this assumption.

IV. Research Design

Sources

To test these hypotheses, information was gathered on the D.C. public school system. This school system was chosen for several reasons. The D.C. school system is comprised of elementary and secondary schools and there is a wide range of building ages, student population compositions, and building conditions. The District also has a wide range of socio-economic groups, with wealthy and poor areas and a range of racial compositions in the population in different areas of the city.

Information on the condition of the school buildings was obtained through Parents United, the D.C. parents advocacy group. Parents United had contracted with a law firm, Steptoe and Johnson, to pursue possible legal action against the D.C. school system. Through the Freedom of Information Act, Steptoe and Johnson gained access to fire safety reports completed by the D.C. Fire Department. Steptoe and Johnson also

collected the building condition reports sponsored by COPE.[2] COPE approached the question of building conditions with the expectation that some schools may be recommended for closing, depending on the findings. To gain an impartial perspective on the condition of the school buildings, rather than rely on the information provided by the D.C. Public Schools, COPE organized several groups of volunteer maintenance workers, engineers, architects, etc., to visit each school and report on the building conditions and the facilities' adequacy. The teams were to estimate the cost of repairing building deficiencies, and gauge whether the building was in overall poor, fair, or excellent condition. The teams also were to evaluate the adequacy of the facilities, identify school needs, and recommend if the building should be retained, consolidated, or closed.

Information on parental involvement was sought in several places. The D.C. Office of Parental Involvement released the results of a survey completed by the Washington Urban League which rated parental involvement in a variety of ways, including Parent Teacher Association (PTA) membership and budgets. Feeling that a larger sample was needed, the researcher attempted to obtain data on the activities of the individual PTAs from the D.C. Congress of PTAs, the umbrella organization representing the PTAs in the District. As mentioned above, after several weeks of effort, and consultation with other parental organizations, it became clear that the Congress did

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[2]The following schools did not have COPE reports, or they were not available: Deal Junior High, Douglass Junior High, Franklin Adult Education Center, Friendship Community School, Hart Junior High, Lee Education Center, Meyer Elementary, Walker-Jones Elementary, Woodson Adult Education Center, and Washington-Highland Community School.

not maintain, or would not release, information on its individual member PTAs; data was therefore limited to the sample provided by the D.C. Office of Parental Involvement. The constraint this presents is discussed below.

Information on the demographic characteristics of the neighborhood surrounding the schools, and therefore somewhat reflecting the population within those schools, was obtained from published Census Bureau data and collected on a tract by tract basis. Other miscellaneous information included in the different models was obtained through the D.C. Public Schools Office of Communications.

The Model of Impact of Parental Involvement on Building Conditions

To test the hypothesis that parental involvement affects the condition of school buildings the following regression was tested:

$$C = \alpha_0 + \alpha_1 T + \alpha_2 P + \alpha_3 B + \alpha_4 A + \alpha_5 W + \alpha_6 I + \alpha_7 E + \epsilon_1 \quad (1)$$

Where

C = condition of the school building (1=excellent, 2=fair, 3=poor

α_i = parameter estimate (i = 0...7)

T = the type of school building (1=elementary, 0=all others)

P = PTA membership at the school on a per student basis

B = PTA budget at the school on a per student basis

A = age of the school

W = percentage of the school's neighborhood population that is white

I = mean income of the school's neighborhood

E = enrollment at the school.

The dependent variable is the condition of the school building, as reported in the results of the COPE reports. In these reports, each school building was rated as being in overall excellent, fair or poor condition. For the purposes of this study, these conditions were assigned ordinal values, 1 being excellent, 2 being fair, and 3 being poor. The total cost of remodeling building deficiencies was also reported in the COPE reports and was used in the initial regression runs as a dependent variable. After further examination of the data, it became evident that the use of total cost of building deficiencies could reflect major costs, such as a new boiler or roof, that did not necessarily have an obvious outward negative appearance. Some schools with these types of repairs were still rated fair or excellent overall due to other factors. Therefore, in order to best represent the overall building condition as it relates to our two hypotheses, the measure of building condition as excellent, fair and poor was used. (For regression results using deficiency costs as a variable, see appendix D).

The first independent variable is the type of school. In our model, the type of school was represented by a dummy variable: 1 representing elementary schools and 0 representing all other types. There are conflicting expected results for this variable. Elementary schools, could be expected to be in worse condition because they may receive smaller allocations of scarce resources in terms of both finances and personnel to address problems. On the other hand, they could also be expected to be in better condition due to experiencing less vandalism, having more attentive parents, and having

to maintain smaller buildings.[3] This variable was included to see which assumption may be correct in the D.C. area.

Parental involvement is represented by the next two variables, as provided by the results of the survey conducted by the Urban League on a sample of the schools of the D.C. area. Although by rigorous statistical standards this was a small sample (52 schools), the Urban League surveyed a variety of schools across the District of Columbia, representing a wide spectrum of areas. There were four measures of parental involvement available: PTA membership for 1989, the PTA budget for 1989, the number of involved parents as reported by the principal or school official, and a rating devised by the Urban League based on the responses of parents to a telephone survey completed at each school. Because schools vary considerably in size, the variables PTA membership, number of involved parents as defined by the Urban League and the PTA budget by the school's enrollment were defined on a per student basis.

One drawback of the survey was that it had a high level of missing information. A rating was devised for each school, but often the PTA membership, PTA budget, or number of involved parents was not reported by the school official. For the purposes of this model, it was assumed that if the PTA membership or PTA budget was not reported by the principal or school official, the PTA was not active, and therefore the missing values for membership or budgets were regarded as zero. (For regression results without

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[3]The size of the building can be considered separately from the enrollment at the school, for which we have controlled. As mentioned above, enrollments have been declining nationwide due to the passage of the baby-boom generation. Larger buildings still require more maintenance than smaller buildings, regardless of the number of students.

this assumption, see Appendix D). While the involvement rating was available for each school, few parents at each school were interviewed by the Urban League, there was little relative variation in the values, and the resulting parameter estimates were insignificant. Therefore, it was not used as a variable in the final model. The use of number of involved parents was also seen as a less desirable variable due to the wide interpretation that could be given to the definition of "involved" by survey respondents. The number of involved parents (versus the involvement rating) is also often missing.

The PTA budget and membership were seen as the best measures of parental involvement available. There was a wide variation in the PTA membership, as well as in the budgets. There were specific expectations as to the effect of these independent variables. The membership of the PTA per student would reflect two things: the size of the school's enrollment, which is controlled for, and the number of active parents. The number of active members of the PTA, regardless of the PTA's resources, can provide an important political, social, and community indicator of concern. It is hoped that the variable will capture the effect of the number of active parents, and it is expected that the size of the PTA will be inversely related to our scale for the condition of the building.

The PTA budget is also expected to be inversely related to the condition of the buildings. A PTA with an active membership could either raise more resources from its own members, a sign of commitment and involvement, or raise more outside resources from fund raisers or the community - additional signs of commitment and involvement. It is assumed that a PTA with a large budget would have more influence over the

condition of the school building for several reasons. Parents could assume the cost or complete some of the minor repairs or maintenance problems themselves, such as painting or providing equipment. Also, PTAs with larger budgets can host political or community events that promote their role as a valued constituency.

The age of a building is another independent variable expected to have an impact on its condition. Age was measured in years since the original construction. One assumes that the older a building is, the worse shape it is in.

The study also controls for two additional independent variables - the income and racial makeup of the area. The mean income and racial makeup of the neighborhood surrounding the school are indicators of the socio-economic area around the school. Income was measured as the mean income in the census tract wherein the school was located as reported by the 1980 Census. The racial composition was reported by the Census as the percentage of caucasians in the total population in the census tract. It is expected that those areas with a higher mean income will have a more powerful influence on the condition of school buildings, due to more local resources and political influence.

A final independent variable in this model is the enrollment of the school. Enrollment will demonstrate how the size of the student population can affect the condition of the building. This variable enables one to test whether the smaller the student population, the better the condition of the building, due to less vandalism and more supervision.

Due to the lack of data available for the variables of PTA membership and PTA

budget, the data set for the first model is limited to 41 complete observations taken from the 52 completed Urban Institute surveys.[4] This is less than desirable, but will still give us an indication of the impact of these various independent variables on building condition. Data was collected when possible for 1989. Census data was collected from 1980, the date of the most recent available census. The model was also tested without the two parental involvement variables in order to compare the results from the other two variables with a larger data set.

Several additional variables were tested with other model specifications. These alternative specifications are discussed below. These variables included the level of education of the census tract population, the operating cost of the school on a per student basis, repair cost per students and others. Models incorporating these variables were tested, but were later dropped if it was determined that they did not fit the final model. (See appendixes B and D).[5]

To further test the model, logistic multiple regression using the Logist procedure, which fits the model to an ordinal dependent variable, was used.[6] Assigning ordinal values to different categories, such as poor, fair, and excellent, could create the impression that there is a measurable difference between the categories. Logist allows

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[4]Although the 52 Urban League surveys had complete data for the parental involvement variables, other information may have been missing.

[5] All models were estimated with all complete observations. One school, Coolidge High School, reported a PTA membership of 2400 for a school with an approximate enrollment of 1200. This observation was dropped as being unreliable.

[6] The Logist procedure was created by Frank Harrell for use with the SAS statistical system.

the use of the assignment of ordinal dummy variables for the dependent variable, but the model makes no assumptions about the meaning on an interval scale of differences between categories.

Model of Impact of Building Condition on Achievement

The second model tested the hypothesis that the condition of buildings has affects the academic achievement of students. The following model was used:

$$S = \beta_0 + \beta_1 C + \beta_2 A + \beta_3 W + \beta_4 I + \beta_5 E + \beta_6 T + \epsilon \qquad (2)$$

Where

S = The school's average Comprehensive Test of Basic Skills score

β_i = parameter estimates (i=1...7)

All other variables are as previously defined.

The variables used in the second model are the same as in the first model except for the new dependent variable, the school's average Comprehensive Test of Basic Skills score. This was obtained through annually published reports of scores by the D.C public schools. The main difference in the independent variables was the use of the condition of the school. As mentioned above, the overall condition of the school was measured on a scale or poor, fair, or excellent, as determined by the independent reports of the COPE. This scale (1=excellent, 2=fair and 3=poor) was the same for both models.

Most importantly in terms of our hypothesis, the condition of the buildings is expected to have a significant impact on student achievement. If buildings are in poor condition, students can be expected to reflect their negative environment. Dilapidated

buildings reduce teacher and student morale and create disruptive environments.

An alternative specification of this model treated condition as a dummy variable. One dummy represented poor building condition, one represented fair building condition, and one represented excellent building condition. The variables used in the are the same as in the second model except for the new independent variables, the dummy variables representing the schools' conditions.

Alternative Specifications

A number of additional variables were also specified, but were not used in the final model. For the first model, testing parental involvement and building condition, several other variables that might have had an impact on the overall building condition were tested. The capacity of the school as listed on the COPE reports was seen as a possible indicator of school size, but was dropped in favor of using the variable enrollment. The latest annual repair costs, total operational costs and the estimated costs of building deficiencies as listed on the COPE reports was also included as possible specifications for building condition. The scale for building condition was used rather than these variables because it best represented the true overall condition of the school. For example, the cost of building deficiencies was originally considered for the dependent variable, however, these amounts can reflect large capital costs, such as a new roof, that may not adequately reflect to true overall perception of the building condition.

For the second model, testing building conditions and student achievement, three other variables were added to the data set: whether or not a school uniform policy was in place at the school and the educational attainment of the community in the school's

census tract. The use of school uniforms was thought to possibly have an impact on achievement scores, but after further consideration as to its importance, the school uniform variable was dropped from the model. The variables representing the educational attainment of the school's community were the percentages of the census tract's population with a high school diploma and the percentage of individuals with at least four years of college education. Because these educational measures were highly correlated with mean income (correlation coefficients of .72 and .74 for income and high school graduation and income and four years of college respectively), and because mean income was felt to be the more important factor in predicting achievement scores, these variables were dropped from the model.

In addition, there were other highly correlated variables. Some of these correlations are logical, for the variables used were merely two different measures of the same impact. The variable best representing the impacts being tested was used.

The strongest correlations (measuring above .60) were:

Table 1

Variables	Pearson's Correlation Coefficient
PTA membership and annual repair cost	.71084
PTA membership per student and annual repair cost	.91356
PTA budget and average achievement score	.92665
PTA budget and PTA budget per student	.95461
PTA membership and PTA membership per student	.64029
PTA budget and percentage of caucasians in census tract	.64337
Percentage of census tract population with high school education and percentage of caucasians in census tract	.78887
Percentage of census tract population with high school education and mean income	.72734
Percentage of census tract population with college education and percentage of caucasians in census tract	.86273
Percentage of high school graduates in census tract and percentage of college graduates in census tract	.69106
Percentage of census tract population with college education and mean income	.74881
School capacity and enrollment	.75896
Mean income and percentage of caucasians in census tract	.67474
Number of involved parents and number of involved parents per student	.8354
Annual repair cost and repair costs per student	.91642
Annual operating costs and the operating costs per student	.63394

Descriptive Statistics

There was a wide variation in the measurement of the variables. Table 1 contains some of the descriptive statistics, showing the minimum, maximum, mean and number of observations for the measurement for the variables included in the two models. Descriptive statistics for all variables tested are included in appendix B.

Table 2

Variable	N	Minimum	Maximum	Mean
Type (T)	158	0	1.00	.73
School's Age (A)	154	1	180	47.69
Caucasian Percentage (W)	157	.05	95.66	19.67
Mean Income (I)	155	8558	53574	19857
School Enrollment (E)	137	67	2400	494.56
PTA Membership (P)*	41	0	600	143.14
PTA Budget (B)*	41	0	117610	11745
Condition of School (C)	152	1	3	2.04
Achievement scores (S)	131	17.06	92.25	49.71
Dummy: schools in poor condition (D1)	160	0	1	.20
Dummy: schools in fair condition (D2)	160	0	1	.59
Dummy: schools in in excellent condition (D3)	160	0	1	.16

*missing observations were set to zero.

In both models, there are certain weaknesses. In the first model, the primary weakness is the limited size of the model due to missing parental involvement data. In the second model, the complexities of the causes of educational success or failure lead to the other major weakness - omitted variable bias, where unmeasured or unmeasurable factors may present strong influences on academic achievement. These weaknesses are discussed below.

V. Results

The results of the two models are summarized in the tables below. As mentioned above, due to the limited number of complete observations available for the model testing our first hypothesis -- how parental involvement affects the condition of school buildings -- the model was run without the parental involvement variables to increase the data set and confirm that the other relationships held true for both the full and the surveyed schools data sets. The second model was also run on both full and surveyed schools data sets, to confirm that the relative relationships and impact held true. All four models, with full and surveyed schools data sets for the first and second hypothesis, were significant at the .05 level. The F-Test values for the first model, full and limited data sets, were 3.991 and 3.286 respectively. The F-Test values for the second model, full and limited data sets, were 10.063 and 2.877 respectively.

Model 1 - Parental Involvement and Building Condition

Table 3 Explaining Building Condition

Predictors	All schools estimate (t-statistic)	Surveyed schools estimate (t-statistic)
Type of school	-.359 (-2.77)***	-.368 (-1.38)
School's age	.0034 (1.74)*	.0050 (1.78)*
Caucasian percentage in the school's census tract	.0018 (.795)	.0039 (.96)
Mean Income in the school's census tract	-.0000167 (-1.893)*	.000025 (1.4)
School enrollment	-.00053 (-2.864)**	-.00097 (-2.384)**
PTA membership per student	-------	-.308 (-.915)
PTA budget per student	-------	-.0029 (-1.92)*
Intercept	2.69 (11.398)***	1.890 (3.898)***
Adj. R^2 =	.10	.28
F-Value =	3.991***	3.286***

* = significant at the .10 level
** = significant at the .05 level
*** = significant at the .01 level

In the first model, the goal is to examine the impact of parental involvement on the condition of the school building. Therefore, the results of the surveyed schools data set, which includes the parental involvement data, are of primary importance. Within

the surveyed schools data set, three variables stand out as being significant. The school's age was found to be a significant predictor of the building condition, although the parameter estimate was fairly small. For every 10 years of increase in the age of the school, the condition of the building will worsen by .34 on the one to three scale of overall condition. This result was not unexpected. As was assumed, as a building gets older, routine maintenance becomes more important, and major repairs and refurbishment become more frequent. The fairly small parameter estimate, though, does suggests that age does not have as great an impact as one might imagine. In the literature of the subject, older buildings were often referred to as having a more sound basic infrastructure than more modern buildings, because they were built to have 50 to 100 year life spans rather than the 35 year life span of buildings made in the 1950's.

School enrollment also was significant. As school enrollment increased, the condition of the building improved. This was contrary to our hypothesis that bigger buildings may have larger maintenance problems, and may support the idea that the larger schools have more resources, financial or personnel, to deal with major repairs than smaller schools. For every increase of 100 students in the enrollment, the condition of the buildings would improve by -.53 on our scale of one to three for overall building condition.

One of the parental involvement variables we are most concerned with in our model is also significant. When the PTA budget increased, the condition of the budget improved. For every $10 increase per student in the PTA budget, the condition of the building was seen to improve by -.29 on our scale of building condition. This is the

expected relationship, showing that the financial resources available to the parent organizations are important.

When testing the first model with all schools, but limiting the number of independent variables, three variables have significant results in terms of predicting the changes in building condition. The first variable, the type of school, is highly significant (at the .01 level) and shows an inverse relationship to building condition. That is, elementary schools tend to be in better condition than other schools, primarily junior and senior high schools. In the limited data set, this variable has the same sign but is not significant.

As in the surveyed schools data set, the school's age is significant in the all schools data set and has almost the same parameter estimate. This is also the case for school enrollment.

The one variable that shows a significant difference in the estimate is mean income. In the surveyed schools data set, although it was not significant, the parameter estimate was positive, indicating that as the mean income of the area surrounding the school increases, the condition of the building worsens. In the all schools data set, the relationship changes, indicating that as the income of the area surrounding the school increases, the condition of the school improves, and the relationship is shown to be significant. This is the more logical result. For every $1000 increase in mean income in the census tract of the school, the building condition is seen to improve by -.16 on our scale.

As mentioned above, we are primarily concerned with testing the impact of

parental involvement on the condition of the school buildings. Therefore, the results of the surveyed schools data set are the most important. However, the main limitation predicting building condition with this smaller data set is the limited number of observations for parental involvement and the resulting low R^2. The results from this model only represent a sample of schools. The statistical significance of the results, and the fact that the relationship between variables held the same signs, for both the full and limited data sets generally indicate that the null hypothesis can be rejected and that parental involvement is having an impact of the condition of school buildings.

Results from the Logist procedure are also supportive of the hypothesis. The Logist results on the limited data set show four significant variables. Age of the school and per capita income are again significant at the .10 level, but with higher Beta coefficients, although the variable for income had unexpectedly changed signs. The variable enrollment shows similar results to the previous model also. Most importantly, the variable representing PTA budgets has increased its significance to the .05 level. The results show that for every additional $10 increase per student in the PTA budget, there would be a corresponding -1.3 change in our scale, showing that increased PTA budgets would lead to improved building conditions.

As mentioned above, we are primarily concerned with testing the impact of parental involvement on the condition of the school buildings. Therefore, the results of the surveyed schools data set are the most important. The results from the full data set support the results from the smaller data set. The variables enrollment, income, and age are again significant, with income taking on the expected sign. Using the larger data set,

type of school becomes very significant, as found in the first model. Both models are significant, with the model chi-square for the limited and full data set being 22.32 and 19.35, respectively. For the Logist procedure, the model chi-square represents the predictive ability of the model.

Model 1 - Parental Involvement and Building Condition

Table 4 Explaining Building Condition - Alternative model

Predictors	All schools estimate (chi-square)	Surveyed schools estimate (chi-square)
Type of school	-1.204 (6.78)***	-1.612 (2.02)
School's age	.0132 (3.49)*	.0207 (3.04)*
Caucasian percentage in the school's census tract	.0086 (.97)	.016 (.97)
Mean Income in the school's census tract	-.0000706 (4.37)**	.000131 (2.94)*
School enrollment	-.0018 (7.32)***	-.00424 (5.72)**
PTA membership per student	-------	1.48 (1.13)
PTA budget per student	-------	-.013 (4.12)**
Intercept	4.185 (20.54)***	-2.887 (1.90)
Model Chi-Square =	19.35***	22.32***

* = significant at the .10 level
** = significant at the .05 level
*** = significant at the .01 level

Model 2 - Building Condition and Student Achievement

In the second model, we are most concerned with the impact of building conditions on achievement scores. Although all of the results from this models are relevant, due to the availability of data for the variables in this model, it is more important to focus on the all schools data set.

Model 2 - Building Condition and Student Achievement

Table 5 Explaining Levels of Achievement Scores

Predictors	All schools estimate (t-statistic)	Surveyed schools estimate (t-statistic)
Type of school[7]	5.724 (1.659)	-.337 (-.039)
School's age	.065 (1.322)	.078 (.951)
Caucasian percentage in the school's census tract	.161 (2.611)**	.174 (1.336)
Mean income in the school's census tract	.000459 (1.987)**	.000446 (.914)
School enrollment	-.0088 (-1.910)*	-.00487 (-.363)
PTA membership per student	-------	13.856
PTA budget per student	-------	.0289 (.639)
Condition of school (poor, fair, excellent)	-5.455 (-2.55)**	-10.845 (-2.331)**
Intercept	47.702 (5.826)***	55.704 (3.218)**
Adj.R^2 =	.34	.28
F-value =	10.063***	2.877**

* = significant at the .10 level
** = significant at the .05 level
*** = significant at the .01 level

In the all schools data set, four variables were seen as significant predictors of

[7] The variable type was almost significant at the .10 level, with a t-statistic of .1003.

student achievement scores. The first was the percentage of whites in the census tract of the school. For every one percent increase in the white population of the school's neighborhood, one can predict an increase of .16 percentage points on the average achievement scores of the school.

The second significant variable, the mean income in the census tract, also conforms to our expectations, with an increase in mean income indicating an increase in average scores. Specifically, for every $1000 increase in mean income, the students' average achievement scores are estimated to increase by 4.59 percentage points.

The third significant variable, school enrollment, has a negative relationship with student achievement. As school enrollment increases, the average student achievement score decreases. This is not unexpected. This model shows that an increase of 100 students can reduce the average achievement scores by 8.8 percentage points. This may be explained by student flight to private schools as they move from smaller elementary schools to larger junior or senior high schools.

Our main hypothesis is supported by the high significance and parameter estimate of the final variable, the building condition of the school. As a school moves from one category to the next, such as poor to fair, average achievement scores can be expected to increase by 5.455 percentage points. If a school were to improve its conditions from poor to excellent we could predict an increase of 10.9 percentage points in the average achievement scores. This result confirms the assumptions of the various national reports that focus on the need to address the basic condition of our schools as a means of improving our educational "outcomes". One could also see selection in this result.

Motivated parents could be avoiding deteriorating schools.

The most important result to highlight from the surveyed schools data set run for this model is that the parameter estimate signs are the same, although the magnitude for the parameter estimate for building condition is doubled. Both in the all schools and the surveyed schools data sets, the sign of the estimated building condition coefficient is negative, meaning that as the condition of the building improves, so does the average student achievement score.

As mentioned above, in this model, we are primarily concerned with testing the impact of the condition of school buildings on student achievement. The all schools data set is important to this model because of the size of the data set. The all schools data set for these variables yields a R^2 of .34.

When using dummy variables representing building condition, five variables were significant predictors of student achievement scores. The variable type of school gained significance in this model, becoming significant at the .10 level. Elementary schools tend to have higher achievement scores than other schools. The variables representing the percentage of whites in the school's census tract, the mean income in the school's census tract and the school enrollment all had the same sign and approximately the same parameter estimates as found in the second model.

Model 2 - Building Conditions and Student Achievement

Table 6 Explaining Building Conditions - Alternative model

Predictors	All schools data set estimate (t-statistic)	Surveyed Schools estimate (t-statistic)
Type of school (T)	6.49 (1.893)*	2.53 (.284)
School's age (A)	.0520 (1.054)	.055 (.648)
Caucasian percentage in the schools census tract (W)	.163 (2.666)***	.191 (1.255)
Mean income in the school's census tract (I)	.000435 (1.89)*	.000324 (.643)
School enrollment (E)	-.0093 (-2.049)**	-.0062 (-.442)
PTA membership per student (M)	-------	14.692 (1.456)
PTA budget per student (B)	-------	.0291 (.583)
Dummy for schools in poor condition (D1)	-8.490 (-2.059)**	-19.093 (-1.861)*
Dummy for schools in fair condition (D2)	-2.422 (-.710)	-9.215 (-1.508)
Intercept	40.183 (5.665)***	43.965 (2.737)**
Adj. R^2 =	.32	.23
F-value =	8.497***	2.313**

* = significant at the .10 level
** = significant at the .05 level
*** = significant at the .01 level

Most importantly for this alternative model, one of the dummy variables, D1, was significant. When compared to our base, schools with excellent building conditions, we can predict a 8.49 percentage point decline in achievement scores for schools in poor condition. This alternative model supports our previous results. The 8.49 percentage point decline is comparable to the 10.9 percentage point difference in achievement scores that we can predict under the second model. The variable D2, representing schools with fair building conditions, was not significant, although it had the expected sign - negative in relation to schools in excellent condition. This indicates that the difference between schools in excellent and fair condition is less important than the difference between schools in excellent condition and those in poor condition.

As in the original building condition and achievement model, the most important result to highlight from the surveyed schools data set is that the parameter estimate signs are the same, although again, the magnitude for the parameter estimates for building condition more than doubles. Both in the all schools and the surveyed schools data sets, the signs of the estimated building condition coefficients are negative, meaning that from our base of excellent schools, a building condition of fair or poor will reduce the average student achievement score.

As mentioned above, in this model, we are primarily concerned with testing the impact of the condition of school buildings on student achievement. Therefore the all schools data set is most important. The all schools data set for these variables yields a R^2 of .32.

VI. Issues for Future Research

Model misspecification is a concern with these models. In this type of statistical analysis, one attempts to create as 'true' a model as possible, reflecting all of the relevant factors that affect the dependent variable. Since one can never be sure that a model is correctly specified, researchers commonly examine more than one possible specification. As mentioned above, various model specifications for both models are included in Appendix D.

When a variable that has an unmeasured or unmeasurable affect on the model is not included, the parameter estimates for included variables can be biased, essentially capturing the effects of the variable that was omitted from the model. (Pindyck and Rubinfeld, 1991, p. 164) For example, student achievement scores can be the result of a wide variety of things, from students' individual health to innate intelligence. The second model included what are some of the most traditional measures of a student's socio-economic situation: the community's racial composition and mean income. Other variables, such as average I.Q. scores or students' health status were not within the scope of this study.

For example, if one assumes that income and health are related, the variable mean income could be reflecting some of the impact of the health status of the student. The model does maintain the significance and nature of the relationship between building condition and student achievement scores across both data sets. Income and the racial make-up of the community should already be reflecting some of the impact of a variable such as health status. However, with as complex a result as student achievement

scores, it would be unwise to assume that this model includes all relevant independent variables.

Further research could address some of these limitations and strengthen the conclusions. In terms of data, additional information, such as PTA budgets, membership, or other indicators of parental involvement, need to be gathered on a per school basis for all schools. Data from the 1990 Census will soon be available, and should also be used in any further research. Reproducing this research in other large cities, or using nationwide data would be a good test of the conclusions reached in this study.

VII. Conclusion

This study tested the hypotheses that parental involvement can affect the condition of buildings in Washington, D.C., and that in turn, the condition of buildings can affect students' academic achievement. These hypotheses were tested on a data set of schools surveyed by the D.C. Council on Public Education and a data set of all schools. Although there are some limitations to these models, the results of the regression analysis generally support the two hypotheses.

In Washington, the role of parents varies greatly. Some schools have a very active PTA. Other parents participate in the advocacy group called Parents United. Unfortunately, some schools have little or no organized parental involvement. This study suggests that in Washington, parents can play an active role in improving the condition of the children's school. Of the parent involvement variables used in the building condition model, the most significant one is the PTA budget.

The second hypothesis, that building conditions affect the academic achievement

of student, was also supported by our model. Mean income and the racial composition of the area of the school were also found to be significant in the all schools model.

There is little argument that a student's environment affects his/her achievement. In fact, most organizations advocating educational reform mention the need for improved facilities. Although widely acknowledged as necessary, funding for routine maintenance and capital expenditures for building improvement are often the first victims of budget cuts. Policy-makers need to recognize this problem as not only affecting future budgets, but also as affecting current students. The improvements can have important second-order effects, namely, increased morale of both students and teachers.

There is no substitute for adequate funding for school maintenance. The way we raise the resources, however, can alleviate the pressure somewhat on local governments. For example, the Carnegie Foundation suggests acquiring matching funds from businesses or the federal government. Parent or community groups can work on providing funds, labor, expertise, or supervision of projects. One hopeful result from the COPE report was that many of the engineering, architects, and maintenance crews that provided assessments of buildings conditions offered to continue their volunteer services.

Businesses often find it fruitful to study the working environment in the search for improved productivity. The issue of the impact of the condition of public school buildings, the financial obligations the public will face, and options to address those obligations are similarly deserving of future research. If a nationwide or multi-city study of this issue were done, we could perhaps better press for a solution, and develop new ways to address the situation. For example, if an infusion of capital funding for the

schools were to become politically attractive, federal matching funds or grants could become available to assist local governments. However, adequate data sources, more completely specified models, and the cooperation of all parties involved in the area of education would be necessary to complete these studies.

The D.C. public school system currently needs $150 million to address building deterioration and facilities maintenance needs, just to bring it to what is normally considered usable condition. (Sanchez, January 9, 1990) Washington will have to address the question of deteriorating facilities soon. The costs of deferred maintenance extend beyond the costs of new boilers and alarm systems. The students within the school system are being affected as well. Good infrastructure is truly at the base of a quality education. For a society searching for ways to address the educational needs of the future, the building itself is a good place to start.

Appendix A
School, Building, and Demographic Data

This appendix contains the raw data used in this report. The schools comprise those for which COPE reports were available. The variable definitions are:

Name:	The abbreviated name of the school. SAS (the statistical software used for this study) will only accommodate eight letters.
Type:	Schools were assigned a 1 if they were listed on the COPE report as an elementary school, and 0 for all others.
Capacity:	The capacity of the school as listed on COPE reports.
Enroll:	The enrollment as listed on the COPE reports.
Age:	The age of the school from first construction as listed on the COPE reports.
Repair:	The latest annual repair costs as listed on the COPE reports.
Operate:	The latest annual operational costs as listed on the COPE reports.
Defcost:	The estimated cost to repair all building deficiencies as listed on the COPE reports.
Condit:	The overall condition of the school on a scale of 1 (excellent), 2 (fair), and 3 (poor), as listed on the COPE reports.
Uniform:	Dummy variable representing the existence of a school uniform program, with 1 representing the existence of a program, and 0 representing no program, as reported by the D.C. Public School's Office of Communications.
Tract:	The census tract in which the school is located.
Ward:	The ward in which the school is located.
Involve:	The number of involved parents at the school as listed in the Urban League survey.

PTAmem: The number of PTA members at the school as listed in the Urban League survey.

Budget: The PTA budget at the school as listed in the Urban League survey.

Rating: The rating for parental involvement as listed in the Urban League survey.

Score: The school's average achievement score on the Comprehensive Test of Basic Skills for the 6th grade and 8th grade or 11th grade as applicable. as reported by the D.C. public school system.

Income: The mean income of the census tract in which the school is located as reported by the 1980 Census.

White: The percentage of caucasians in the school's census tract as reported by the 1980 Census.

College: The percentage of persons with four or more years of college in the school's census tract as reported by the 1980 Census.

HSgrad: The percentage of persons with a high school diploma in the school's census tract.

Defcost2: Defcost divided by the school's enrollment.

PTAmem2: PTAmem divided by the school's enrollment.

Involve2: Involve divided by the school's enrollment.

Repair2: Repair divided by the school's enrollment.

Budget2: Budget divided by the school's enrollment.

Operate2: Operate divided by the school's enrollment.

D1: Dummy varible representing those schools with poor building conditions as listed on the COPE reports.

D2: Dummy variable representing those schools with fair building conditions as listed on the COPE reports.

D3: Dummy variable representing those schools with excellent building conditions as listed on the COPE reports.

OBS	NAME	TYPE	CAPACITY	ENROLL	AGE	REPAIR	OPERATE	DEFCOST	CONDIT	UNIFORM
1	bancroft	1	649	760	65	20281	345	873925	2	0
2	bruce-mo	1	888	469	16	10579	732	852019	2	0
3	clevelan	1	275	235	77	.	479	1412097	3	0
4	H.D.cook	1	617	565	88	.	.	2486000	3	1
5	fillmore	1	200	175	97	.	.	50000	2	0
6	gage-eck	1	576	408	12	.	.	63000	1	1
7	willharr	1	.	.	.	.	.	200000	.	1
8	katielew	1	.	.	.	.	.	185000	.	0
9	tubman	.	.	.	.	.	.	216100	3	1
10	parkview	1	.	524	.	.	.	965500	3	1
11	garnetpa	0	507	308	61	20645	726	129940	3	0
12	abrahaml	0	1236	876	22	8406	388	187710	3	0
13	banneker	0	682	375	50	.	.	1130780	2	0
14	cardozo	0	1431	1040	73	.	.	2481420	2	0
15	Amidon	1	578	.	29	.	.	75000	1	0
16	Bowen	1	636	320	13	.	.	132000	3	0
17	hyde	1	192	148	82	.	.	115000	2	0
18	Garrison	1	772	375	25	.	.	129550	2	0
19	montgome	1	817	477	50	.	.	254850	2	0
20	ross	1	194	188	1	.	.	900000	3	0
21	seaton	1	716	366	20	.	.	620000	3	0
22	stevens	1	338	.	121	.	.	392400	3	0
23	syphax	1	584	250	88	.	.	2000000	3	0
24	vanness	1	580	231	33	.	.	215400	2	0
25	thomson	1	382	341	91	.	.	370950	1	0
26	jowilson	1	812	487	28	.	.	62000	2	1
27	francis	0	751	.	62	.	.	757500	2	0
28	jeffers	0	524	735	49	.	.	315000	3	0
29	shaw	0	1215	1124	12	.	.	200000	1	0
30	Grant	0	260	230	107	.	.	600000	3	0

OBS	TRACT	WARD	INVOLVE	PTAMEM	BUDGET	RATING	SCORE	INCOME	WHITE	COLLEGE	HSGRAD
1	27.01	1	12	300	.	2.000	56.25	20245	39.32	41.65	79.60
2	31.00	1	0	.	.	.	44.00	15791	1.02	5.67	45.30
3	45.00	1	0	.	.	.	46.50	18493	2.74	12.23	42.20
4	38.00	1	0	.	.	.	54.50	17159	24.32	37.83	69.00
5	2.00	2	0	.	.	.	.	39338	93.76	72.41	94.80
6	34.00	1	0	.	.	1.789	41.50	14231	0.87	16.03	49.10
7	44.00	1	0	.	.	.	34.25	16176	3.99	18.90	59.00
8	33.01	1	0	.	.	.	43.50	20437	2.63	12.77	52.20
9	31.00	1	0	.	.	.	35.25	15791	1.02	5.67	45.30
10	32.00	1	0	.	.	1.667	37.00	17197	0.97	13.41	55.90
11	45.00	1	0	.	.	.	26.25	18493	2.74	12.24	42.20
12	28.00	1	0	.	.	.	36.00	12453	9.46	12.45	52.70
13	31.00	1	0	.	.	.	81.25	15791	1.02	5.67	45.30
14	36.00	1	0	.	.	.	26.75	13913	15.09	11.15	45.00
15	61.00	2	0	.	.	.	67.25	33203	59.52	72.92	96.30
16	63.02	2	0	.	.	.	46.00	28993	68.82	33.16	94.70
17	2.00	2	0	.	.	.	.	39338	93.76	72.41	94.80
18	50.00	2	0	.	.	.	35.75	13853	22.69	23.63	57.70
19	48.01	2	0	.	.	.	59.00	14847	2.39	9.82	35.90
20	53.01	2	1	35	1500	2.316	28.00	19185	68.79	54.54	85.70
21	49.01	2	0	.	.	.	60.00	12938	3.35	17.48	47.10
22	54.01	2	0	.	.	.	63.50	19159	83.51	56.33	93.50
23	64.00	2	0	.	.	2.273	33.50	9451	3.53	7.86	33.70

24	72.00	2	0	.	.	.	58.50	9586	5.86	4.25	28.80
25	51.00	2	0	.	.	.	59.25	12980	41.13	27.96	70.20
26	85.00	2	5	.	.	1.478	49.00	17306	3.34	6.59	44.00
27	55.02	2	0	.	.	.	48.75	25760	85.50	65.67	90.80
28	62.01	2	12	150	4600	1.762	57.50	28312	85.71	58.97	86.71
29	49.01	2	0	211	800	1.269	46.00	12938	3.35	17.48	47.10
30	57.01	2	0	.	.	.	.	14862	88.08	57.66	92.70

OBS	DEFCOST2	PTAMEM2	INVOLVE2	REPAIR2	BUDGET2	OPERATE2	D1	D2	D3
1	1149.90	0.39474	0.015789	26.686	0.000	0.45395	0	1	0
2	1816.67	.	0.000000	22.557	.	1.56077	0	1	0
3	6008.92	.	0.000000	.	.	2.03830	1	0	0
4	4400.00	.	0.000000	.	.	.	1	0	0
5	285.71	.	0.000000	.	.	.	0	1	0
6	154.41	0.00000	0.000000	.	0.000	.	0	0	1
7	.	.	.	.	.	.	0	0	0
8	.	.	.	.	.	.	0	0	0
9	.	.	.	.	.	.	1	0	0
10	1842.56	0.00000	0.000000	.	0.000	.	1	0	0
11	421.88	.	0.000000	67.029	.	2.35714	1	0	0
12	214.28	.	0.000000	9.596	.	0.44292	1	0	0
13	3015.41	.	0.000000	.	.	.	0	1	0
14	2385.98	.	0.000000	.	.	.	0	1	0
15	.	.	.	.	.	.	0	0	1
16	412.50	.	0.000000	.	.	.	1	0	0
17	777.03	.	0.000000	.	.	.	0	1	0
18	345.47	.	0.000000	.	.	.	0	1	0
19	534.28	.	0.000000	.	.	.	0	1	0
20	4787.23	0.18617	0.005319	.	7.979	.	1	0	0
21	1693.99	.	0.000000	.	.	.	1	0	0
22	.	.	.	.	.	.	1	0	0
23	8000.00	0.00000	0.000000	.	0.000	.	1	0	0
24	932.47	.	0.000000	.	.	.	0	1	0
25	1087.83	.	0.000000	.	.	.	0	0	1
26	127.31	0.00000	0.010267	.	0.000	.	0	1	0
27	.	.	.	.	.	.	0	1	0
28	428.57	0.20408	0.016327	.	6.259	.	1	0	0
29	177.94	0.18772	0.000000	.	0.712	.	0	0	1
30	2608.70	.	0.000000	.	.	.	1	0	0

OBS	NAME	TYPE	CAPACITY	ENROLL	AGE	REPAIR	OPERATE	DEFCOST	CONDIT	UNIFORM
31	wormley	0	80	70	105	.	.	1270826	3	0
32	eaton	1	386	.	78	.	.	260000	1	0
33	hearst	1	150	147	57	.	.	608000	3	0
34	terrell	0	937	299	37	.	.	2500000	2	0
35	lafayett	1	516	502	58	.	.	178000	1	0
36	janney	1	410	265	64	.	.	646000	2	0
37	key	1	194	151	61	.	.	905000	2	0
38	horacema	1	218	191	58	.	.	150000	1	0
39	murch	1	483	395	60	.	.	200000	2	0
40	oyster	1	240	362	63	.	.	600000	2	0
41	stoddert	1	218	182	57	.	.	75500	2	0
42	hardy	1	242	200	52	.	.	60000	1	0
43	duke	0	425	375	91	.	.	100000	2	0
44	wilson	0	1500	1406	54	.	.	1229400	.	1
45	marieree	.	.	.	.	.	.	324000	2	1
46	takoma	1	1052	560	13	14313	544	74910	1	0
47	winston	0	960	.	13	.	.	253200	2	0
48	phwlps	0	576	443	55	46122	587	228150	2	0
49	brooklan	1	496	653	15	.	.	74602	3	1
50	hughbrow	0	1214	462	57	205110	894	339450	2	0
51	bunkerhi	1	698	540	49	12508	457	294700	2	1
52	burrough	1	650	255	68	34202	449	733800	2	1
53	johncook	1	364	.	63	2373	580	237410	2	0
54	emery	1	696	468	15	.	.	582300	2	0
55	ftlincol	1	600	471	9	.	.	1481500	1	0
56	langdon	1	955	67	59	.	.	5000000	3	0
57	langston	1	168	.	87	.	.	750000	3	0
58	noyes	1	480	.	58	.	.	1000000	2	0
59	shaed	1	704	.	18	.	.	328750	2	0
60	slowe	1	566	.	41	.	.	1058000	1	0

OBS	TRACT	WARD	INVOLVE	PTAMEM	BUDGET	RATING	SCORE	INCOME	WHITE	COLLEGE	HSGRAD
31	2.00	2	0	.	.	.	.	39338	93.76	72.41	94.80
32	6.00	3	0	.	.	.	73.25	38292	90.44	62.67	89.50
33	6.00	3	12	100	8960	2.316	70.75	38292	90.44	62.67	89.50
34	47.00	2	0	.	.	.	41.50	11200	3.82	8.24	39.20
35	15.00	3	12	314	95000	3.034	92.25	12392	87.69	63.77	94.50
36	10.01	3	12	202	117610	2.667	90.00	36452	94.31	50.73	84.30
37	9.02	3	0	.	.	.	.	42754	93.58	61.98	93.70
38	8.01	3	0	.	.	.	87.00	53574	95.66	68.15	91.60
39	12.00	3	0	.	.	.	92.25	30432	88.19	61.73	91.10
40	5.01	3	0	.	.	.	74.50	25864	88.39	56.09	90.80
41	7.02	3	12	.	.	2.579	.	22136	91.48	50.89	93.10
42	8.02	3	0	.	.	.	85.75	35034	95.01	69.84	94.90
43	3.00	3	0	.	.	.	.	26261	94.10	65.09	92.40
44	11.00	3	0	.	.	.	49.25	38848	91.04	57.01	91.30
45	38.00	1	0	.	.	.	51.75	17159	24.32	37.83	69.00
46	17.00	4	11	.	.	2.280	72.00	23726	17.49	22.78	75.20
47	74.05	7	0	.	.	.	27.00	12222	0.44	28.33	76.60
48	89.04	5	0	.	.	.	21.25	11426	0.26	4.03	38.50
49	93.01	5	0	.	.	.	45.75	22026	17.52	25.97	66.50
50	89.04	5	12	600	1000	1.833	70.00	11426	0.26	4.03	38.50
51	94.00	5	0	.	.	.	67.00	25471	4.38	25.43	70.70
52	94.00	5	12	.	.	1.857	67.25	25471	4.38	25.43	70.70
53	46.00	5	0	.	.	.	.	12099	1.82	3.45	29.00

54	87.01	5	5	148	4500	1.941	36.00	20957	0.53	10.45	50.50
55	90.00	5	12	.	.	2.083	51.50	14932	4.00	24.76	53.30
56	91.01	5	3	75	.	2.074	58.25	26926	11.67	16.70	65.30
57	46.00	5	0	.	.	.	58.25	12099	1.82	3.45	29.00
58	93.02	5	0	.	.	.	44.75	17829	2.00	12.46	66.80
59	92.02	5	0	.	.	.	46.00	15648	3.02	8.61	50.20
60	93.01	5	0	.	.	.	81.00	22026	17.52	25.97	66.50

OBS	DEFCOST2	PTAMEM2	INVOLVE2	REPAIR2	BUDGET2	OPERATE2	D1	D2	D3
31	18154.66	.	0.000000	.	.	.	1	0	0
32	.	.	.	.	.	.	0	0	1
33	4136.05	0.68027	0.081633	.	60.952	.	1	0	0
34	8361.20	.	0.000000	.	.	.	0	1	0
35	354.58	0.62550	0.023904	.	189.243	.	0	0	1
36	2437.74	0.76226	0.045283	.	443.811	.	0	1	0
37	5993.38	.	0.000000	.	.	.	0	1	0
38	785.34	.	0.000000	.	.	.	0	0	1
39	506.33	.	0.000000	.	.	.	0	1	0
40	1657.46	.	0.000000	.	.	.	0	1	0
41	414.84	0.00000	0.065934	.	0.000	.	0	1	0
42	300.00	.	0.000000	.	.	.	0	0	1
43	266.67	.	0.000000	.	.	.	0	1	0
44	874.40	.	0.000000	.	.	.	0	0	0
45	.	.	.	.	.	.	0	1	0
46	133.77	0.00000	0.019643	25.559	0.000	0.97143	0	0	1
47	.	.	.	.	.	.	0	1	0
48	515.01	.	0.000000	104.113	.	1.32506	0	1	0
49	114.25	.	0.000000	.	.	.	1	0	0
50	734.74	1.29870	0.025974	443.961	2.165	1.93506	0	1	0
51	545.74	.	0.000000	23.163	.	0.84630	0	1	0
52	2877.65	0.00000	0.047059	134.125	0.000	1.76078	0	1	0
53	.	.	.	.	.	.	0	1	0
54	1244.23	0.31624	0.010684	.	9.615	.	0	1	0
55	3145.44	0.00000	0.025478	.	0.000	.	0	0	1
56	74626.87	1.11940	0.044776	.	0.000	.	1	0	0
57	.	.	.	.	.	.	1	0	0
58	.	.	.	.	.	.	0	1	0
59	.	.	.	.	.	.	0	1	0
60	.	.	.	.	.	.	0	0	1

OBS	NAME	TYPE	CAPACITY	ENROLL	AGE	REPAIR	OPERATE	DEFCOST	CONDIT	UNIFORM
61	webb	1	998	642	29	.	.	1808210	1	0
62	wheatley	1	868	.	86	.	.	1176750	3	0
63	woodrigd	1	386	.	62	.	.	619100	2	0
64	young	1	672	517	58	15933	330	1173000	2	1
65	backus	0	731	.	26	.	.	90500	2	0
66	hamilton	0	1164	710	21	.	.	121800	3	0
67	langley	0	698	452	66	.	.	2884000	3	0
68	taft	0	1092	.	36	.	.	3820000	2	0
69	dunbar	0	1566	1258	15	.	.	80000	2	0
70	mckiney	0	1478	1066	61	.	.	12000000	.	0
71	joeleli	0	1309	591	48	128713	1063	1271700	2	0
72	barnard	1	682	345	63	.	.	170000	2	0
73	brightw	1	484	490	63	.	.	154000	2	1
74	clark	1	573	291	21	.	.	24000	1	0
75	keene	1	494	363	55	.	.	101000	2	0
76	jessela	1	676	448	32	10641	418	1268500	.	0
77	petworth	1	380	203	87	.	.	4000000	3	0
78	powell	1	408	270	64	.	.	.	.	1
79	charsray	1	742	585	65	147224	737	584208	2	0
80	rudolf	1	720	497	49	13183	395	227179	2	1
81	shepherd	1	484	418	57	23950	435	167725	1	0
82	truesdel	1	808	462	81	13182	455	537922	2	1
83	west	1	648	499	11	.	.	7550	1	0
84	whittier	1	724	498	63	.	.	150200	2	0
85	mcfarlan	0	778	388	66	.	.	456100	2	0
86	paul	0	903	490	59	.	.	1422400	2	0
87	rabaut	0	1202	502	22	.	.	355725	2	0
88	coolidge	0	1188	1336	49	128198	589	9060760	2	0
89	roosevel	0	1254	1217	57	101834	853	321596	1	0
90	birney	1	925	486	39	25360	514	257404	3	0

OBS	TRACT	WARD	INVOLVE	PTAMEM	BUDGET	RATING	SCORE	INCOME	WHITE	COLLEGE	HSGRAD
61	88.04	5	2	.	.	1.609	41.50	12427	0.45	3.81	42.70
62	88.02	5	0	.	.	.	52.50	15830	1.09	3.83	40.50
63	91.01	5	0	.	.	.	24.50	26926	11.67	16.70	65.30
64	89.04	5	0	.	.	.	49.25	11426	0.26	4.03	38.50
65	95.08	5	0	.	.	.	34.50	26408	2.26	19.08	74.80
66	88.03	5	0	.	.	.	35.50	8558	35.80	6.90	53.60
67	87.01	5	0	.	.	.	38.25	20957	0.53	10.45	50.50
68	94.00	5	0	.	.	.	54.75	25471	4.38	25.43	70.70
69	46.00	5	0	.	.	.	43.25	12099	1.82	3.45	29.00
70	87.01	5	0	120	800	1.292	28.00	20957	0.53	10.45	50.50
71	80.02	6	0	.	.	.	.	20796	13.55	21.13	53.70
72	22.02	4	0	.	.	.	60.00	18333	2.38	10.73	64.70
73	20.01	4	0	.	.	.	48.50	23788	2.17	35.23	79.30
74	24.00	4	0	.	.	.	41.25	20155	3.14	9.76	57.90
75	95.08	4	0	.	.	.	59.00	26405	2.26	19.80	74.80
76	.	4	0	.	.	.	.	.	.	.	.
77	24.00	4	0	.	.	.	64.25	20155	3.14	9.76	57.90
78	25.02	4	0	.	.	.	45.00	17530	2.24	14.71	57.40
79	25.02	4	0	.	.	.	33.50	17530	2.24	14.71	57.40
80	21.02	4	0	.	.	.	67.00	20657	3.51	13.93	61.50
81	16.00	4	0	.	.	.	77.00	48738	31.90	50.43	89.00
82	21.01	4	0	.	.	.	39.50	18610	2.49	9.46	55.90
83	20.02	4	0	.	.	.	50.50	24718	8.65	21.87	67.30

84	19.92	4	0	.	.	.	75.00	28982	8.58	25.60	68.00
85	25.01	4	0	.	.	.	31.00	21686	7.58	12.16	60.80
86	19.01	4	0	.	.	.	52.50	24602	2.83	15.64	64.70
87	18.04	4	0	.	.	.	55.25	20065	5.18	24.37	74.10
88	19.02	4	4	.	1000	1.783	37.25	28982	8.57	25.60	68.00
89	25.01	4	0	.	.	.	27.25	21686	7.58	12.16	60.80
90	98.09	8	0	.	.	.	31.50	.	30.26	2.94	37.00

S	DEFCOST2	PTAMEM2	INVOLVE2	REPAIR2	BUDGET2	OPERATE2	D1	D2	D3
61	2816.53	0.00000	0.003115	.	0.0000	.	0	0	1
62	.	.	.	.	.	.	1	0	0
63	.	.	.	.	.	.	0	1	0
64	2268.86	.	0.000000	30.818	.	0.63830	0	1	0
65	.	.	.	.	.	.	0	1	0
66	171.55	.	0.000000	.	.	.	1	0	0
67	6380.53	.	0.000000	.	.	.	1	0	0
68	.	.	.	.	.	.	0	1	0
69	63.59	.	0.000000	.	.	.	0	1	0
70	11257.04	0.11257	0.000000	.	0.7505	.	0	0	0
71	2151.78	.	0.000000	217.788	.	1.79865	0	1	0
72	492.75	.	0.000000	.	.	.	0	1	0
73	314.29	.	0.000000	.	.	.	0	1	0
74	82.47	.	0.000000	.	.	.	0	0	1
75	278.24	.	0.000000	.	.	.	0	1	0
76	2831.47	.	0.000000	23.752	.	0.93304	0	0	0
77	19704.43	.	0.000000	.	.	.	1	0	0
78	.	.	0.000000	.	.	.	0	0	0
79	998.65	.	0.000000	251.665	.	1.25983	0	1	0
80	457.10	.	0.000000	26.525	.	0.79477	0	1	0
81	401.26	.	0.000000	57.297	.	1.04067	0	0	1
82	1164.33	.	0.000000	28.532	.	0.98485	0	1	0
83	15.13	.	0.000000	.	.	.	0	0	1
84	301.61	.	0.000000	.	.	.	0	1	0
85	1175.52	.	0.000000	.	.	.	0	1	0
86	2902.86	.	0.000000	.	.	.	0	1	0
87	708.62	.	0.000000	.	.	.	0	1	0
88	6782.01	0.00000	0.002994	95.957	0.7485	0.44087	0	1	0
89	264.25	.	0.000000	83.676	.	0.70090	0	0	1
90	529.64	.	0.000000	52.181	.	1.05761	1	0	0

OBS	NAME	TYPE	CAPACITY	ENROLL	AGE	REPAIR	OPERATE	DEFCOST	CONDIT	UNIFORM
91	draper	1	628	573	36	11583	324	507125	2	1
92	garfield	1	545	460	79	4537	272	384000	2	0
93	green	1	771	638	29	7972	334	1512955	2	0
94	hendley	1	720	597	30	.	433	735500	2	0
95	king	1	744	480	18	.	419	314826	2	0
96	leckie	1	716	203	19	.	.	389100	2	0
97	malcomb	1	936	270	16	.	450	69500	1	0
98	mcgogney	1	751	585	23	.	816	618146	2	0
99	moten	1	1182	497	34	.	.	849680	3	0
100	patterso	1	703	418	44	.	.	258000	2	0
101	savoy	1	730	560	31	.	.	52000	2	0
102	simon	1	440	462	39	.	.	54000	2	0
103	terrell	1	1124	499	12	.	.	20000	1	0
104	turner	1	740	498	44	.	.	300000	3	0
105	wilken	1	598	564	13	36416	706	204910	2	0
106	whighlan	1	744	660	15	850	817	169090	2	1
107	JHjohnso	0	1257	529	19	.	.	90750	2	0
108	ballou	0	2044	1971	29	.	.	69700	2	0
109	buchanan	0	200	110	94	.	.	2829052	3	0
110	anacosti	0	1342	1325	54	.	467	3871714	3	0
111	eastern	0	1847	2400	66	.	302	639000	1	0
112	carver	1	568	132	80	.	.	132890	2	0
113	davis	1	836	568	46	.	.	116300	2	1
114	drew	1	784	386	30	.	.	289550	2	1
115	aiton	1	710	511	29	.	.	72800	2	1
116	beers	1	660	623	47	.	.	307500	2	1
117	benning	1	504	318	13	.	.	102300	2	1
118	burrvill	1	433	.	9	.	.	94700	1	1
119	fletcher	0	1916	1051	12	.	.	250650	1	0
120	harris	1	724	475	35	.	.	635160	2	1

OBS	TRACT	WARD	INVOLVE	PTAMEM	BUDGET	RATING	SCORE	INCOME	WHITE	COLLEGE	HSGRAD
91	98.01	8	0	180	950	1.692	33.25	14211	0.48	5.55	57.60
92	74.08	8	0	.	.	.	60.50	13885	2.13	3.12	53.10
93	73.04	8	0	.	.	.	60.50	15130	1.01	3.75	56.40
94	98.06	8	0	.	.	.	32.75	14088	1.19	6.06	63.90
95	98.04	8	0	.	.	.	45.50	16057	1.50	3.00	5.24
96	73.08	8	0	.	.	.	57.25	.	12.93	3.73	16.90
97	73.04	8	0	.	.	1.793	33.25	15130	1.01	3.75	56.40
98	73.04	8	8	165	1000	2.435	54.00	15130	1.01	3.74	56.40
99	74.07	8	0	.	.	.	36.25	15274	0.65	5.11	53.20
100	98.07	8	0	60	4000	4.000	17.06	16762	4.85	8.85	64.50
101	74.01	8	0	.	.	.	42.75	11537	0.05	1.68	38.90
102	98.04	8	0	.	.	.	48.25	16057	1.53	5.24	62.10
103	73.04	8	0	.	.	1.607	41.50	15130	1.01	8.24	39.20
104	74.04	8	7	60	1800	1.414	38.50	13694	0.22	3.43	50.20
105	74.07	8	0	.	.	.	.	15274	0.65	5.11	53.20
106	98.01	8	0	.	.	.	38.25	14211	0.48	5.55	57.60
107	74.04	8	0	30	70	1.714	25.75	13694	0.22	3.43	50.20
108	98.03	8	0	.	.	.	32.00	14615	2.87	6.25	71.10
109	69.00	6	4	15	0	1.733	.	19719	25.04	7.28	55.50
110	76.01	6	0	.	.	.	27.25	16680	8.61	7.09	58.40
111	80.02	6	0	.	.	.	36.00	20796	13.55	21.13	53.70
112	78.05	7	0	.	.	.	47.50	14838	0.45	2.98	50.30
113	77.07	7	0	100	.	1.826	39.00	20025	1.28	9.26	61.50

114	78.07	7	0	175	1200	1.556	44.75	13334	0.36	4.95	47.70
[illegible]5	78.04	7	0	.	.	.	.	14633	0.33	9.13	47.60
[illegible]6	76.04	7	0	.	.	.	.	20080	9.56	14.83	69.50
117	96.03	7	0	.	.	1.950	55.00	15109	0.51	13.88	59.30
[illegible]8	78.07	7	0	.	.	.	.	13334	0.36	4.95	47.70
[illegible]9	99.04	7	4	300	2000	1.792	66.50	15479	0.71	6.13	57.50
120	99.05	7	0	.	.	.	.	16018	0.08	3.91	45.30

[illegible]S	DEFCOST2	PTAMEM2	INVOLVE2	REPAIR2	BUDGET2	OPERATE2	D1	D2	D3
91	885.03	0.31414	0.000000	20.2147	1.6579	0.56545	0	1	0
[illegible]2	834.78	.	0.000000	9.8630	.	0.59130	0	1	0
[illegible]3	2371.40	.	0.000000	12.4953	.	0.52351	0	1	0
94	1231.99	.	0.000000	.	.	0.72529	0	1	0
95	655.89	.	0.000000	.	.	0.87292	0	1	0
[illegible]6	1916.75	.	0.000000	.	.	.	0	1	0
[illegible]7	257.41	0.00000	0.000000	.	0.0000	1.66667	0	0	1
98	1056.66	0.28205	0.013675	.	1.7094	1.39487	0	1	0
[illegible]9	1709.62	.	0.000000	.	.	.	1	0	0
[illegible]0	617.22	0.14354	0.000000	.	9.5694	.	0	1	0
101	92.86	.	0.000000	.	.	.	0	1	0
[illegible]2	116.88	.	0.000000	.	.	.	0	1	0
[illegible]3	40.08	0.00000	0.000000	.	0.0000	.	0	0	1
104	602.41	0.12048	0.014056	.	3.6145	.	1	0	0
105	363.32	.	0.000000	64.5674	.	1.25177	0	1	0
[illegible]6	256.20	.	0.000000	1.2879	.	1.23788	0	1	0
[illegible]7	171.55	0.05671	0.000000	.	0.1323	.	0	1	0
108	35.36	.	0.000000	.	.	.	0	1	0
[illegible]9	25718.65	0.13636	0.036364	.	0.0000	.	1	0	0
[illegible]0	2922.05	.	0.000000	.	.	0.35245	1	0	0
111	266.25	.	0.000000	.	.	0.12583	0	0	1
[illegible]2	1006.74	.	0.000000	.	.	.	0	1	0
[illegible]3	204.75	0.17606	0.000000	.	0.0000	.	0	1	0
[illegible]4	750.13	0.45337	0.000000	.	3.1088	.	0	1	0
115	142.47	.	0.000000	.	.	.	0	1	0
[illegible]6	493.58	.	0.000000	.	.	.	0	1	0
[illegible]7	321.70	0.00000	0.000000	.	0.0000	.	0	1	0
118	.	.	.	.	.	.	0	0	1
[illegible]9	238.49	0.28544	0.003806	.	1.9029	.	0	0	1
[illegible]0	1337.18	.	0.000000	.	.	.	0	1	0

OBS	NAME	TYPE	CAPACITY	ENROLL	AGE	REPAIR	OPERATE	DEFCOST	CONDIT	UNIFORM
121	houston	1	652	345	27	.	.	330800	1	1
[illegible]2	kenilwor	1	600	189	56	.	.	229320	2	0
[illegible]3	kimball	1	793	575	47	.	.	318415	1	1
124	merritt	1	576	290	13	.	.	105250	2	0
[illegible]5	nalle	1	812	477	39	17262	474	159550	2	0
[illegible]6	plummer	1	724	330	30	9481	612	308750	2	1
127	randel	1	384	494	77	15460	392	109530	2	0
[illegible]8	richards	1	624	624	180	4839	1117	61820	2	1
[illegible]9	riverter	1	408	257	37	.	.	579350	2	0
130	shadd	1	798	524	34	.	.	422100	2	0
131	smothers	1	394	346	66	.	.	568300	2	1
[illegible]2	thomas	1	894	445	43	.	.	814900	2	0
[illegible]3	weatherl	1	836	.	19	.	.	313500	2	1
134	winston	0	960	.	13	.	.	253200	1	0
[illegible]5	evans	0	400	706	25	.	.	75000	3	0
[illegible]6	miller	0	.	602	40	.	.	195085	2	0
137	roper	0	1500	370	23	.	.	70000	2	1
[illegible]8	sousa	0	800	520	39	.	.	150000	2	0
[illegible]9	woodson	0	617	363	33	.	.	169400	2	0
140	blow	1	792	467	20	6853	419	215760	.	0
141	brent	1	338	288	21	3259	546	118500	2	0
[illegible]2	bryan	1	563	225	80	.	755	702000	2	0
[illegible]3	gibbs	1	772	350	29	.	526	753000	3	1
144	giddings	1	506	147	102	.	975	647000	2	0
[illegible]5	goding	1	644	282	30	.	616	203000	2	0
[illegible]6	ketcham	1	788	698	80	.	640	447400	2	0
147	kingsman	1	536	352	67	.	405	381150	1	0
148	ludlow	1	620	380	20	.	452	159000	2	0
[illegible]9	maury	1	396	167	103	.	1091	98050	2	0
150	miner	1	532	303	89	.	.	191300	2	0

OBS	TRACT	WARD	INVOLVE	PTAMEM	BUDGET	RATING	SCORE	INCOME	WHITE	COLLEGE	HSGRAD
121	78.05	7	10	.	.	2.263	72.25	14838	0.45	2.98	50.30
[illegible]2	96.01	7	0	.	.	.	.	18540	0.54	10.51	54.30
[illegible]3	99.01	7	0	.	.	.	.	31259	15.05	24.43	75.90
124	78.05	7	5	30	.	1.647	71.25	14838	0.45	2.98	50.30
125	99.04	7	10	100	8000	1.824	42.00	15474	0.71	6.13	57.50
[illegible]6	99.06	7	0	.	.	.	.	15365	0.69	3.76	55.80
[illegible]7	76.04	7	0	.	.	.	.	20080	9.56	14.83	69.50
128	78.08	7	12	25	.	1.840	54.00	18412	0.24	5.88	47.30
[illegible]9	96.04	7	0	.	.	2.412	74.50	18851	1.06	6.46	56.30
[illegible]0	99.03	7	0	.	.	.	.	14808	0.13	8.24	49.60
131	78.03	7	12	95	2000	2.067	48.00	15262	0.77	9.21	50.80
[illegible]2	96.02	7	0	.	.	.	.	11497	0.15	1.79	49.10
[illegible]3	77.03	7	0	.	.	.	.	15347	0.50	6.10	53.20
134	76.03	7	0	.	.	.	.	22452	33.05	28.33	76.60
135	78.08	7	0	.	.	.	34.25	18412	0.24	5.88	47.30
[illegible]6	78.04	7	0	.	.	.	45.00	14633	0.33	9.13	47.60
[illegible]7	78.05	7	2	150	.	1.200	33.25	14838	0.45	2.98	50.30
138	77.03	7	0	.	.	.	52.25	15347	0.50	6.10	53.20
[illegible]9	78.03	7	0	.	.	.	41.00	15262	0.76	9.21	50.80
[illegible]0	79.03	6	0	.	.	.	43.50	16368	0.74	9.09	52.50
141	65.00	6	0	.	.	.	54.00	27910	80.45	68.09	88.50
[illegible]2	69.00	6	7	70	1500	1.833	42.00	19719	25.14	29.37	55.50
[illegible]3	79.01	6	0	.	.	.	65.00	14806	1.40	6.87	43.60

144	70.00	6	0	.	.	.	.	28240	61.11	53.42	73.50
145	84.02	6	0	.	.	.	67.50	20375	17.65	21.63	54.60
146	75.01	6	0	.	.	.	46.00	14483	4.05	6.53	55.60
147	80.01	6	8	73	100	1.720	50.75	22573	9.38	15.72	49.02
148	83.02	6	12	125	.	1.857	44.50	22573	33.59	34.59	64.20
149	80.02	6	0	.	.	.	47.25	20796	13.55	21.13	53.70
150	79.01	6	0	.	.	.	69.75	14806	1.40	6.87	43.60

BS	DEFCOST2	PTAMEM2	INVOLVE2	REPAIR2	BUDGET2	OPERATE2	D1	D2	D3
121	958.84	0.00000	0.028986	.	0.0000	.	0	0	1
122	1213.33	.	0.000000	.	.	.	0	1	0
123	553.77	.	0.000000	.	.	.	0	0	1
124	362.93	0.10345	0.017241	.	0.0000	.	0	1	0
125	334.49	0.20964	0.020964	36.1887	16.7715	0.99371	0	1	0
126	935.61	.	0.000000	28.7303	.	1.85455	0	1	0
127	221.72	.	0.000000	31.2955	.	0.79352	0	1	0
128	99.07	0.04006	0.019231	7.7548	0.0000	1.79006	0	1	0
129	2254.28	0.00000	0.000000	.	0.0000	.	0	1	0
130	805.53	.	0.000000	.	.	.	0	1	0
131	1642.49	0.27457	0.034682	.	5.7803	.	0	1	0
132	1831.24	.	0.000000	.	.	.	0	1	0
133	.	.	.	.	.	.	0	1	0
134	.	.	.	.	.	.	0	0	1
135	106.23	.	0.000000	.	.	.	1	0	0
136	324.06	.	0.000000	.	.	.	0	1	0
137	189.19	0.40541	0.005405	.	0.0000	.	0	1	0
138	288.46	.	0.000000	.	.	.	0	1	0
139	466.67	.	0.000000	.	.	.	0	1	0
140	462.01	.	0.000000	14.6745	.	0.89722	0	0	0
141	411.46	.	0.000000	11.3160	.	1.89583	0	1	0
142	3120.00	0.31111	0.031111	.	6.6667	3.35556	0	1	0
143	2151.43	.	0.000000	.	.	1.50286	1	0	0
144	4401.36	.	0.000000	.	.	6.63265	0	1	0
145	719.86	.	0.000000	.	.	2.18440	0	1	0
146	640.97	.	0.000000	.	.	0.91691	0	1	0
147	1082.81	0.20739	0.022727	.	0.2841	1.15057	0	0	1
148	418.42	0.32895	0.031579	.	0.0000	1.18947	0	1	0
149	587.13	.	0.000000	.	.	6.53293	0	1	0
150	631.35	.	0.000000	.	.	.	0	1	0

OBS	NAME	TYPE	CAPACITY	ENROLL	AGE	REPAIR	OPERATE	DEFCOST	CONDIT	UNIFORM
151	orr	1	625	596	15	.	.	128450	1	1
152	payne	1	757	270	36	.	.	121360	3	0
153	peabody	1	266	.	109	.	.	359600	2	1
154	staton	1	534	540	39	.	.	1686800	3	0
155	tyler	1	816	295	40	.	.	310450	2	0
156	watkins	1	846	490	27	.	.	134110	2	0
157	eliot	0	890	500	68	.	874	1988000	3	0
158	kramer	0	758	546	48	.	.	585000	2	0
159	hine	0	794	721	23	.	512	636000	2	0
160	stuart	0	649	317	62	.	.	959400	2	0

OBS	TRACT	WARD	INVOLVE	PTAMEM	BUDGET	RATING	SCORE	INCOME	WHITE	COLLEGE	HSGRAD
151	76.01	6	0	.	.	.	57.25	16680	8.67	7.08	58.40
152	68.02	6	0	.	.	.	53.75	19362	6.72	12.11	45.20
153	82.00	6	0	.	.	.	.	23642	84.62	67.35	91.60
154	75.02	6	0	.	.	.	44.50	13528	2.97	7.29	55.50
155	78.03	6	0	.	.	2.000	35.75	15262	0.77	9.21	50.80
156	69.00	6	0	.	.	.	.	19719	25.04	7.28	55.50
157	80.02	6	0	.	.	.	35.50	20796	13.55	21.13	53.70
158	.	.	.	.	.	.	.	.	.	.	.
159	66.00	6	0	.	.	.	37.50	28174	88.43	67.96	90.00
160	83.01	6	0	.	.	.	.	27397	34.24	.	.

OBS	DEFCOST2	PTAMEM2	INVOLVE2	REPAIR2	BUDGET2	OPERATE2	D1	D2	D3
151	215.52	.	0.000000	.	.	.	0	0	1
152	449.48	.	0.000000	.	.	.	1	0	0
153	.	.	.	.	.	.	0	1	0
154	3123.70	.	0.000000	.	.	.	1	0	0
155	1052.37	0.00000	0.000000	.	0.0000	.	0	1	0
156	273.69	.	0.000000	.	.	.	0	1	0
157	3976.00	.	0.000000	.	.	1.74800	1	0	0
158	1071.43	.	.	.	.	.	0	1	0
159	882.11	.	0.000000	.	.	0.71012	0	1	0
160	3026.50	.	0.000000	.	.	.	0	1	0

Appendix B
Simple Statistics and Correlation Analysis

This appendix contains the correlation analysis and simple statistics as produced by the SAS statistical package. Several strong correlations were noted (see section "Alternative Specifications" in text) and if in preliminary regression runs both variables were included, the variable best fitting our specified model was kept, and the other dropped. As previously mentioned, the observation for PTA membership for Coolidge School was dropped because it was not deemed reliable.

CORRELATION ANALYSIS

29 'VAR' Variables: TYPE CAPACITY ENROLL AGE REPAIR OPERATE DEFCOST CONDIT UNIFORM TRACT WARD INVOLVE PTAMEM BUDGET RATING SCORE INCOME WHITE COLLEGE HSGRAD DEFCOST2 PTAMEM2 INVOLVE2 REPAIR2 BUDGET2 OPERATE2 D1 D2 D3

Simple Statistics

Variable	N	Mean	Std Dev	Sum
TYPE	158	0.72785	0.44648	115.00000
CAPACITY	154	712.44156	346.16045	109716
ENROLL	138	494.55797	326.11491	68249
AGE	155	47.69032	28.20831	7392
REPAIR	31	35525	50617	1101269
OPERATE	48	577.41667	218.06624	27716
DEFCOST	159	730997	1384149	116228466
CONDIT	153	2.03922	0.61647	312.00000
UNIFORM	160	0.21875	0.41470	35.00000
TRACT	158	61.98278	29.79754	9793
WARD	159	4.89308	2.20928	778.00000
INVOLVE	159	1.50943	3.60532	240.00000
PTAMEM	28	143.14286	122.22284	4008
BUDGET	22	11745	30896	258390
RATING	44	1.95630	0.49048	86.07700
SCORE	131	49.71038	16.08701	6512
INCOME	156	19857	7784	3097656
WHITE	158	19.67335	31.05359	3108
COLLEGE	157	20.62828	20.62249	3239
HSGRAD	157	60.45522	18.01388	9491
DEFCOST2	137	2366	7117	324207
PTAMEM2	44	0.22128	0.29324	9.73638
INVOLVE2	137	0.00528	0.01326	0.72401
REPAIR2	30	65.44562	92.62398	1963
BUDGET2	44	17.57801	72.10871	773.43241
OPERATE2	47	1.42122	1.26335	66.79750
D1	160	0.20000	0.40126	32.00000
D2	160	0.59375	0.49267	95.00000
D3	160	0.16250	0.37007	26.00000

Simple Statistics

Variable	Minimum	Maximum
TYPE	0	1.00000
CAPACITY	80.00000	2044
ENROLL	67.00000	2400
AGE	1.00000	180.00000
REPAIR	850.00000	205110
OPERATE	272.00000	1117
DEFCOST	7550	12000000
CONDIT	1.00000	3.00000
UNIFORM	0	1.00000
TRACT	2.00000	99.06000

WARD	1.00000	8.00000
INVOLVE	0	12.00000
PTAMEM	15.00000	600.00000
BUDGET	0	117610
RATING	1.20000	4.00000
SCORE	17.06000	92.25000
INCOME	8558	53574
WHITE	0.05000	95.66000
COLLEGE	1.68000	72.92000
HSGRAD	5.24000	96.30000
DEFCOST2	15.13026	74627
PTAMEM2	0	1.29870
INVOLVE2	0	0.08163
REPAIR2	1.28788	443.96104
BUDGET2	0	443.81132
OPERATE2	0.12583	6.63265
D1	0	1.00000
D2	0	1.00000
D3	0	1.00000

CORRELATION ANALYSIS

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0
/ Number of Observations

	TYPE	CAPACITY	ENROLL	AGE	REPAIR	OPERATE
TYPE	1.00000 0.0 158	-0.49494 0.0001 154	-0.44886 0.0001 138	0.01470 0.8559 155	-0.60482 0.0003 31	-0.20753 0.1570 48
CAPACITY	-0.49494 0.0001 154	1.00000 0.0 154	0.75896 0.0001 136	-0.34420 0.0001 154	0.58212 0.0006 31	0.01451 0.9220 48
ENROLL	-0.44886 0.0001 138	0.75896 0.0001 136	1.00000 0.0 138	-0.15219 0.0758 137	0.35589 0.0536 30	-0.17250 0.2463 47
AGE	0.01470 0.8559 155	-0.34420 0.0001 154	-0.15219 0.0758 137	1.00000 0.0 155	0.07297 0.6965 31	0.37803 0.0081 48
REPAIR	-0.60482 0.0003 31	0.58212 0.0006 31	0.35589 0.0536 30	0.07297 0.6965 31	1.00000 0.0 31	0.50978 0.0034 31
OPERATE	-0.20753 0.1570 48	0.01451 0.9220 48	-0.17250 0.2463 47	0.37803 0.0081 48	0.50978 0.0034 31	1.00000 0.0 48
DEFCOST	-0.25481 0.0013 157	0.22296 0.0056 153	0.20918 0.0142 137	0.15075 0.0620 154	0.36014 0.0466 31	-0.02051 0.8899 48
CONDIT	-0.11268 0.1684 151	-0.14064 0.0871 149	-0.16369 0.0598 133	0.22646 0.0053 150	-0.12746 0.5100 29	0.07529 0.6190 46
UNIFORM	0.24422 0.0020 158	-0.02045 0.8013 154	0.02090 0.8078 138	-0.02547 0.7531 155	-0.29110 0.1121 31	-0.06946 0.6390 48
TRACT	0.03220 0.6899 156	0.24035 0.0029 152	0.09762 0.2582 136	-0.26462 0.0009 153	-0.11073 0.5602 30	0.02072 0.8900 47
WARD	0.07681 0.3390 157	0.21325 0.0081 153	0.09487 0.2701 137	-0.24885 0.0019 154	-0.11316 0.5444 31	0.02612 0.8601 48
INVOLVE	0.10437 0.1933 157	-0.07637 0.3481 153	-0.06741 0.4338 137	0.07130 0.3796 154	0.20268 0.2742 31	0.10882 0.4616 48
PTAMEM	-0.28380 0.1433	0.36382 0.0570	0.34134 0.0755	-0.12189 0.5367	0.91356 0.0301	0.07839 0.8411

	28	28	28	28	5	9
BUDGET	0.26197	-0.24368	-0.17810	0.22258	-0.51798	-0.18832
	0.2389	0.2745	0.4278	0.3194	0.4820	0.6859
	22	22	22	22	4	7
RATING	0.37518	-0.42123	-0.30513	0.09497	-0.23835	0.22601
	0.0121	0.0049	0.0440	0.5447	0.5697	0.4578
	44	43	44	43	8	13
SCORE	0.32272	-0.36280	-0.30445	0.16570	-0.07428	-0.09413
	0.0002	0.0001	0.0010	0.0637	0.7242	0.5583
	129	125	114	126	25	41
INCOME	0.02248	-0.30494	-0.14861	0.24848	0.01999	0.01627
	0.7820	0.0001	0.0866	0.0021	0.9180	0.9145
	154	150	134	151	29	46
WHITE	-0.02682	-0.39456	-0.18222	0.30259	-0.10446	0.03161
	0.7397	0.0001	0.0337	0.0001	0.5828	0.8329
	156	152	136	153	30	47
COLLEGE	-0.01712	-0.39779	-0.17024	0.29553	-0.01067	0.03451
	0.8326	0.0001	0.0484	0.0002	0.9554	0.8179
	155	151	135	152	30	47
HSGRAD	-0.01664	-0.30612	-0.08810	0.21904	-0.11120	-0.08696
	0.8372	0.0001	0.3096	0.0067	0.5585	0.5611
	155	151	135	152	30	47
DEFCOST2	-0.04546	-0.04541	-0.18151	0.19481	0.30593	0.08095
	0.5978	0.6010	0.0338	0.0230	0.1002	0.5886
	137	135	137	136	30	47
PTAMEM2	-0.13517	0.05080	-0.16595	0.14382	0.71084	0.25930
	0.3817	0.7463	0.2817	0.3575	0.0481	0.3923
	44	43	44	43	8	13

CORRELATION ANALYSIS

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0
/ Number of Observations

	TYPE	CAPACITY	ENROLL	AGE	REPAIR	OPERATE
INVOLVE2	0.13027	-0.19135	-0.19963	0.11371	0.17149	0.06233
	0.1292	0.0262	0.0193	0.1875	0.3649	0.6772
	137	135	137	136	30	47
REPAIR2	-0.48810	0.41597	-0.00146	0.09565	0.91642	0.47457
	0.0062	0.0222	0.9939	0.6151	0.0001	0.0081
	30	30	30	30	30	30
BUDGET2	0.11503	-0.21321	-0.12529	0.13271	-0.10707	-0.01226
	0.4572	0.1698	0.4177	0.3963	0.8008	0.9683
	44	43	44	43	8	13
OPERATE2	0.14862	-0.37215	-0.48513	0.38045	0.19759	0.63394
	0.3188	0.0100	0.0005	0.0083	0.2953	0.0001
	47	47	47	47	30	47
D1	-0.09179	-0.13235	-0.09242	0.15175	-0.11430	-0.01858
	0.2514	0.1018	0.2810	0.0594	0.5404	0.9003
	158	154	138	155	31	48
D2	0.01687	-0.00358	-0.09522	0.03481	0.10689	0.17939
	0.8334	0.9648	0.2666	0.6672	0.5671	0.2224
	158	154	138	155	31	48
D3	0.07962	0.07971	0.15933	-0.20140	0.07345	-0.13881
	0.3200	0.3258	0.0619	0.0120	0.6945	0.3467
	158	154	138	155	31	48

CORRELATION ANALYSIS

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0
/ Number of Observations

	DEFCOST	CONDIT	UNIFORM	TRACT	WARD	INVOLVE
TYPE	-0.25481	-0.11268	0.24422	0.03220	0.07681	0.10437
	0.0013	0.1684	0.0020	0.6899	0.3390	0.1933
	157	151	158	156	157	157
CAPACITY	0.22296	-0.14064	-0.02045	0.24035	0.21325	-0.07637
	0.0056	0.0871	0.8013	0.0029	0.0081	0.3481
	153	149	154	152	153	153
ENROLL	0.20918	-0.16369	0.02090	0.09762	0.09487	-0.06741
	0.0142	0.0598	0.8078	0.2582	0.2701	0.4338
	137	133	138	136	137	137
AGE	0.15075	0.22646	-0.02547	-0.26462	-0.24885	0.07130
	0.0620	0.0053	0.7531	0.0009	0.0019	0.3796
	154	150	155	153	154	154
REPAIR	0.36014	-0.12746	-0.29110	-0.11073	-0.11316	0.20268
	0.0466	0.5100	0.1121	0.5602	0.5444	0.2742
	31	29	31	30	31	31
OPERATE	-0.02051	0.07529	-0.06946	0.02072	0.02612	0.10882
	0.8899	0.6190	0.6390	0.8900	0.8601	0.4616
	48	46	48	47	48	48
DEFCOST	1.00000	0.26187	-0.11790	0.00678	-0.08679	-0.01329
	0.0	0.0011	0.1388	0.9328	0.2782	0.8683
	159	153	159	157	158	158
CONDIT	0.26187	1.00000	-0.03282	0.04487	-0.13000	-0.08592
	0.0011	0.0	0.6871	0.5831	0.1104	0.2926
	153	153	153	152	152	152
UNIFORM	-0.11790	-0.03282	1.00000	0.10438	0.05336	0.00072
	0.1388	0.6871	0.0	0.1918	0.5041	0.9928
	159	153	160	158	159	159
TRACT	0.00678	0.04487	0.10438	1.00000	0.68402	-0.02158
	0.9328	0.5831	0.1918	0.0	0.0001	0.7879
	157	152	158	158	158	158
WARD	-0.08679	-0.13000	0.05336	0.68402	1.00000	-0.00106
	0.2782	0.1104	0.5041	0.0001	0.0	0.9894
	158	152	159	158	159	159
INVOLVE	-0.01329	-0.08592	0.00072	-0.02158	-0.00106	1.00000
	0.8683	0.2926	0.9928	0.7879	0.9894	0.0
	158	152	159	158	159	159
PTAMEM	-0.10741	-0.37700	-0.09707	-0.13019	-0.30648	0.29605
	0.5864	0.0526	0.6231	0.5091	0.1127	0.1261

	28	27	28	28	28	28
BUDGET	-0.12393	-0.22095	-0.13640	-0.60218	-0.37595	0.43490
	0.5827	0.3358	0.5450	0.0030	0.0846	0.0431
	22	21	22	22	22	22
RATING	-0.17139	0.01696	-0.24107	-0.23315	-0.04253	0.22303
	0.2660	0.9140	0.1149	0.1277	0.7840	0.1456
	44	43	44	44	44	44
SCORE	-0.14014	-0.25231	-0.02406	-0.31443	-0.17807	0.28891
	0.1118	0.0045	0.7850	0.0003	0.0419	0.0008
	130	125	131	131	131	131
INCOME	0.05178	-0.13802	-0.10841	-0.47075	-0.27687	0.04598
	0.5223	0.0921	0.1779	0.0001	0.0005	0.5687
	155	150	156	156	156	156
WHITE	-0.08404	0.00765	-0.18486	-0.51000	-0.40113	0.13583
	0.2954	0.9255	0.0201	0.0001	0.0001	0.0888
	157	152	158	158	158	158
COLLEGE	-0.05076	-0.07543	-0.12349	-0.53720	-0.46632	0.11505
	0.5291	0.3573	0.1234	0.0001	0.0001	0.1513
	156	151	157	157	157	157
HSGRAD	-0.04701	-0.10933	-0.05270	-0.43815	-0.31250	0.11045
	0.5600	0.1814	0.5122	0.0001	0.0001	0.1685
	156	151	157	157	157	157
DEFCOST2	0.48885	0.28826	-0.10206	0.00815	-0.08298	0.02044
	0.0001	0.0008	0.2353	0.9252	0.3368	0.8133
	137	133	137	135	136	136
PTAMEM2	0.01524	0.21776	-0.17459	-0.07480	-0.07893	0.30287
	0.9218	0.1607	0.2570	0.6294	0.6105	0.0457
	44	43	44	44	44	44

CORRELATION ANALYSIS

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0
/ Number of Observations

	DEFCOST	CONDIT	UNIFORM	TRACT	WARD	INVOLVE
INVOLVE2	0.03742	0.03016	-0.01032	-0.06487	-0.03893	0.83540
	0.6653	0.7313	0.9047	0.4530	0.6515	0.0001
	136	132	137	136	137	137
REPAIR2	0.08571	-0.03117	-0.22993	0.05165	-0.08184	0.28630
	0.6525	0.8749	0.2216	0.7902	0.6673	0.1251
	30	28	30	29	30	30
BUDGET2	-0.05870	-0.02901	-0.14345	-0.44175	-0.21587	0.29253
	0.7051	0.8535	0.3529	0.0027	0.1593	0.0540
	44	43	44	44	44	44
OPERATE2	-0.16123	0.07802	-0.09303	0.10869	0.01209	-0.00667
	0.2789	0.6105	0.5340	0.4721	0.9357	0.9645
	47	45	47	46	47	47
D1	0.17716	0.80412	-0.07559	-0.03496	-0.21780	-0.04060
	0.0255	0.0001	0.3421	0.6628	0.0058	0.6114
	159	153	160	158	159	159
D2	-0.14942	-0.08168	0.03752	0.15317	0.26170	0.00040
	0.0601	0.3155	0.6376	0.0547	0.0009	0.9960
	159	153	160	158	159	159
D3	-0.12595	-0.76525	-0.02818	-0.11155	-0.03259	0.09347
	0.1137	0.0001	0.7236	0.1629	0.6834	0.2412
	159	153	160	158	159	159

CORRELATION ANALYSIS

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0
/ Number of Observations

	PTAMEM	BUDGET	RATING	SCORE	INCOME	WHITE
TYPE	-0.28380	0.26197	0.37518	0.32272	0.02248	-0.02682
	0.1433	0.2389	0.0121	0.0002	0.7820	0.7397
	28	22	44	129	154	156
CAPACITY	0.36382	-0.24368	-0.42123	-0.36280	-0.30494	-0.39456
	0.0570	0.2745	0.0049	0.0001	0.0001	0.0001
	28	22	43	125	150	152
ENROLL	0.34134	-0.17810	-0.30513	-0.30445	-0.14861	-0.18222
	0.0755	0.4278	0.0440	0.0010	0.0866	0.0337
	28	22	44	114	134	136
AGE	-0.12189	0.22258	0.09497	0.16570	0.24848	0.30259
	0.5367	0.3194	0.5447	0.0637	0.0021	0.0001
	28	22	43	126	151	153
REPAIR	0.91356	-0.51798	-0.23835	-0.07428	0.01999	-0.10446
	0.0301	0.4820	0.5697	0.7242	0.9180	0.5828
	5	4	8	25	29	30
OPERATE	0.07839	-0.18832	0.22601	-0.09413	0.01627	0.03161
	0.8411	0.6859	0.4578	0.5583	0.9145	0.8329
	9	7	13	41	46	47
DEFCOST	-0.10741	-0.12393	-0.17139	-0.14014	0.05178	-0.08404
	0.5864	0.5827	0.2660	0.1118	0.5223	0.2954
	28	22	44	130	155	157
CONDIT	-0.37700	-0.22095	0.01696	-0.25231	-0.13802	0.00765
	0.0526	0.3358	0.9140	0.0045	0.0921	0.9255
	27	21	43	125	150	152
UNIFORM	-0.09707	-0.13640	-0.24107	-0.02406	-0.10841	-0.18486
	0.6231	0.5450	0.1149	0.7850	0.1779	0.0201
	28	22	44	131	156	158
TRACT	-0.13019	-0.60218	-0.23315	-0.31443	-0.47075	-0.51000
	0.5091	0.0030	0.1277	0.0003	0.0001	0.0001
	28	22	44	131	156	158
WARD	-0.30648	-0.37595	-0.04253	-0.17807	-0.27687	-0.40113
	0.1127	0.0846	0.7840	0.0419	0.0005	0.0001
	28	22	44	131	156	158
INVOLVE	0.29605	0.43490	0.22303	0.28891	0.04598	0.13583
	0.1261	0.0431	0.1456	0.0008	0.5687	0.0888
	28	22	44	131	156	158
PTAMEM	1.00000	0.24301	0.02748	0.46524	-0.20718	0.08076
	0.0	0.2885	0.8896	0.0145	0.2901	0.6829

	28	21	28	27	28	28
BUDGET	0.24301	1.00000	0.45248	0.69106	0.30538	0.64337
	0.2885	0.0	0.0345	0.0005	0.1670	0.0012
	21	22	22	21	22	22
RATING	0.02748	0.45248	1.00000	0.22895	0.17387	0.41203
	0.8896	0.0345	0.0	0.1447	0.2590	0.0055
	28	22	44	42	44	44
SCORE	0.46524	0.69106	0.22895	1.00000	0.42203	0.43040
	0.0145	0.0005	0.1447	0.0	0.0001	0.0001
	27	21	42	131	129	131
INCOME	-0.20718	0.30538	0.17387	0.42203	1.00000	0.67474
	0.2901	0.1670	0.2590	0.0001	0.0	0.0001
	28	22	44	129	156	156
WHITE	0.08076	0.64337	0.41203	0.43040	0.67474	1.00000
	0.6829	0.0012	0.0055	0.0001	0.0001	0.0
	28	22	44	131	156	158
COLLEGE	0.10223	0.55044	0.37295	0.43823	0.74881	0.92665
	0.6047	0.0079	0.0127	0.0001	0.0001	0.0001
	28	22	44	131	155	157
HSGRAD	0.01715	0.57971	0.49582	0.35250	0.72734	0.78887
	0.9310	0.0047	0.0006	0.0001	0.0001	0.0001
	28	22	44	131	155	157
DEFCOST2	-0.18848	-0.10754	0.00847	0.03252	0.12561	0.02740
	0.3368	0.6338	0.9565	0.7324	0.1497	0.7524
	28	22	44	113	133	135
PTAMEM2	0.64029	0.42404	0.12806	0.37921	0.25036	0.30475
	0.0002	0.0492	0.4074	0.0133	0.1012	0.0443
	28	22	44	42	44	44

CORRELATION ANALYSIS

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0
/ Number of Observations

	PTAMEM	BUDGET	RATING	SCORE	INCOME	WHITE
INVOLVE2	-0.03276	0.32857	0.25773	0.30619	0.15296	0.22938
	0.8685	0.1354	0.0912	0.0009	0.0776	0.0072
	28	22	44	114	134	136
REPAIR2	0.90045	-0.37370	-0.17846	0.08410	-0.07748	-0.13307
	0.0371	0.6263	0.6724	0.6894	0.6952	0.4914
	5	4	8	25	28	29
BUDGET2	0.18283	0.95461	0.36515	0.50187	0.41809	0.57104
	0.3517	0.0001	0.0148	0.0007	0.0047	0.0001
	28	22	44	42	44	44
OPERATE2	-0.07629	-0.10102	-0.05971	0.07010	0.15243	0.24899
	0.8453	0.8294	0.8464	0.6632	0.3175	0.0952
	9	7	13	41	45	46
D1	-0.30738	-0.15043	-0.01159	-0.13493	-0.05512	0.08085
	0.1116	0.5040	0.9405	0.1244	0.4943	0.3126
	28	22	44	131	156	158
D2	0.07407	0.00572	0.09789	-0.03457	-0.09598	-0.11586
	0.7080	0.9799	0.5273	0.6951	0.2333	0.1471
	28	22	44	131	156	158
D3	0.27674	0.19880	-0.03034	0.26094	0.16061	0.07507
	0.1540	0.3751	0.8450	0.0026	0.0452	0.3485
	28	22	44	131	156	158

CORRELATION ANALYSIS

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0
/ Number of Observations

	COLLEGE	HSGRAD	DEFCOST2	PTAMEM2	INVOLVE2	REPAIR2
TYPE	-0.01712 0.8326 155	-0.01664 0.8372 155	-0.04546 0.5978 137	-0.13517 0.3817 44	0.13027 0.1292 137	-0.48810 0.0062 30
CAPACITY	-0.39779 0.0001 151	-0.30612 0.0001 151	-0.04541 0.6010 135	0.05080 0.7463 43	-0.19135 0.0262 135	0.41597 0.0222 30
ENROLL	-0.17024 0.0484 135	-0.08810 0.3096 135	-0.18151 0.0338 137	-0.16595 0.2817 44	-0.19963 0.0193 137	-0.00146 0.9939 30
AGE	0.29553 0.0002 152	0.21904 0.0067 152	0.19481 0.0230 136	0.14382 0.3575 43	0.11371 0.1875 136	0.09565 0.6151 30
REPAIR	-0.01067 0.9554 30	-0.11120 0.5585 30	0.30593 0.1002 30	0.71084 0.0481 8	0.17149 0.3649 30	0.91642 0.0001 30
OPERATE	0.03451 0.8179 47	-0.08696 0.5611 47	0.08095 0.5886 47	0.25930 0.3923 13	0.06233 0.6772 47	0.47457 0.0081 30
DEFCOST	-0.05076 0.5291 156	-0.04701 0.5600 156	0.48885 0.0001 137	0.01524 0.9218 44	0.03742 0.6653 136	0.08571 0.6525 30
CONDIT	-0.07543 0.3573 151	-0.10933 0.1814 151	0.28826 0.0008 133	0.21776 0.1607 43	0.03016 0.7313 132	-0.03117 0.8749 28
UNIFORM	-0.12349 0.1234 157	-0.05270 0.5122 157	-0.10206 0.2353 137	-0.17459 0.2570 44	-0.01032 0.9047 137	-0.22993 0.2216 30
TRACT	-0.53720 0.0001 157	-0.43815 0.0001 157	0.00815 0.9252 135	-0.07480 0.6294 44	-0.06487 0.4530 136	0.05165 0.7902 29
WARD	-0.46632 0.0001 157	-0.31250 0.0001 157	-0.08298 0.3368 136	-0.07893 0.6105 44	-0.03893 0.6515 137	-0.08184 0.6673 30
INVOLVE	0.11505 0.1513 157	0.11045 0.1685 157	0.02044 0.8133 136	0.30287 0.0457 44	0.83540 0.0001 137	0.28630 0.1251 30
PTAMEM	0.10223 0.6047	0.01715 0.9310	-0.18848 0.3368	0.64029 0.0002	-0.03276 0.8685	0.90045 0.0371

	28	28	28	28	28	5
BUDGET	0.55044	0.57971	-0.10754	0.42404	0.32857	-0.37370
	0.0079	0.0047	0.6338	0.0492	0.1354	0.6263
	22	22	22	22	22	4
RATING	0.37295	0.49582	0.00847	0.12806	0.25773	-0.17846
	0.0127	0.0006	0.9565	0.4074	0.0912	0.6724
	44	44	44	44	44	8
SCORE	0.43823	0.35250	0.03252	0.37921	0.30619	0.08410
	0.0001	0.0001	0.7324	0.0133	0.0009	0.6894
	131	131	113	42	114	25
INCOME	0.74881	0.72734	0.12561	0.25036	0.15296	-0.07748
	0.0001	0.0001	0.1497	0.1012	0.0776	0.6952
	155	155	133	44	134	28
WHITE	0.92665	0.78887	0.02740	0.30475	0.22938	-0.13307
	0.0001	0.0001	0.7524	0.0443	0.0072	0.4914
	157	157	135	44	136	29
COLLEGE	1.00000	0.86273	0.02527	0.24844	0.19084	-0.06218
	0.0	0.0001	0.7719	0.1039	0.0266	0.7487
	157	157	134	44	135	29
HSGRAD	0.86273	1.00000	0.03751	0.20533	0.18796	-0.24277
	0.0001	0.0	0.6670	0.1812	0.0290	0.2045
	157	157	134	44	135	29
DEFCOST2	0.02527	0.03751	1.00000	0.41630	0.28322	0.12701
	0.7719	0.6670	0.0	0.0049	0.0008	0.5036
	134	134	137	44	136	30
PTAMEM2	0.24844	0.20533	0.41630	1.00000	0.40372	0.84264
	0.1039	0.1812	0.0049	0.0	0.0066	0.0086
	44	44	44	44	44	8

CORRELATION ANALYSIS

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0
/ Number of Observations

	COLLEGE	HSGRAD	DEFCOST2	PTAMEM2	INVOLVE2	REPAIR2
INVOLVE2	0.19084	0.18796	0.28322	0.40372	1.00000	0.33649
	0.0266	0.0290	0.0008	0.0066	0.0	0.0690
	135	135	136	44	137	30
REPAIR2	-0.06218	-0.24277	0.12701	0.84264	0.33649	1.00000
	0.7487	0.2045	0.5036	0.0086	0.0690	0.0
	29	29	30	8	30	30
BUDGET2	0.46139	0.42612	-0.04039	0.38255	0.30311	-0.07394
	0.0016	0.0039	0.7946	0.0104	0.0455	0.8619
	44	44	44	44	44	8
OPERATE2	0.26385	0.00720	0.20500	0.18857	0.07245	0.39896
	0.0764	0.9621	0.1669	0.5373	0.6284	0.0290
	46	46	47	13	47	30
D1	0.00846	-0.04047	0.32963	0.13752	0.06921	-0.08239
	0.9163	0.6148	0.0001	0.3734	0.4216	0.6651
	157	157	137	44	137	30
D2	-0.10525	-0.06713	-0.20866	0.08821	-0.04609	0.15710
	0.1896	0.4035	0.0144	0.5691	0.5928	0.4071
	157	157	137	44	137	30
D3	0.13067	0.13243	-0.10390	-0.20424	0.02559	-0.03637
	0.1028	0.0982	0.2270	0.1836	0.7666	0.8487
	157	157	137	44	137	30

CORRELATION ANALYSIS

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0
/ Number of Observations

	BUDGET2	OPERATE2	D1	D2	D3
TYPE	0.11503	0.14862	-0.09179	0.01687	0.07962
	0.4572	0.3188	0.2514	0.8334	0.3200
	44	47	158	158	158
CAPACITY	-0.21321	-0.37215	-0.13235	-0.00358	0.07971
	0.1698	0.0100	0.1018	0.9648	0.3258
	43	47	154	154	154
ENROLL	-0.12529	-0.48513	-0.09242	-0.09522	0.15933
	0.4177	0.0005	0.2810	0.2666	0.0619
	44	47	138	138	138
AGE	0.13271	0.38045	0.15175	0.03481	-0.20140
	0.3963	0.0083	0.0594	0.6672	0.0120
	43	47	155	155	155
REPAIR	-0.10707	0.19759	-0.11430	0.10689	0.07345
	0.8008	0.2953	0.5404	0.5671	0.6945
	8	30	31	31	31
OPERATE	-0.01226	0.63394	-0.01858	0.17939	-0.13881
	0.9683	0.0001	0.9003	0.2224	0.3467
	13	47	48	48	48
DEFCOST	-0.05870	-0.16123	0.17716	-0.14942	-0.12595
	0.7051	0.2789	0.0255	0.0601	0.1137
	44	47	159	159	159
CONDIT	-0.02901	0.07802	0.80412	-0.08168	-0.76525
	0.8535	0.6105	0.0001	0.3155	0.0001
	43	45	153	153	153
UNIFORM	-0.14345	-0.09303	-0.07559	0.03752	-0.02818
	0.3529	0.5340	0.3421	0.6376	0.7236
	44	47	160	160	160
TRACT	-0.44175	0.10869	-0.03496	0.15317	-0.11155
	0.0027	0.4721	0.6628	0.0547	0.1629
	44	46	158	158	158
WARD	-0.21587	0.01209	-0.21780	0.26170	-0.03259
	0.1593	0.9357	0.0058	0.0009	0.6834
	44	47	159	159	159
INVOLVE	0.29253	-0.00667	-0.04060	0.00040	0.09347
	0.0540	0.9645	0.6114	0.9960	0.2412
	44	47	159	159	159
PTAMEM	0.18283	-0.07629	-0.30738	0.07407	0.27674
	0.3517	0.8453	0.1116	0.7080	0.1540

	28	9	28	28	28
BUDGET	0.95461	-0.10102	-0.15043	0.00572	0.19880
	0.0001	0.8294	0.5040	0.9799	0.3751
	22	7	22	22	22
RATING	0.36515	-0.05971	-0.01159	0.09789	-0.03034
	0.0148	0.8464	0.9405	0.5273	0.8450
	44	13	44	44	44
SCORE	0.50187	0.07010	-0.13493	-0.03457	0.26094
	0.0007	0.6632	0.1244	0.6951	0.0026
	42	41	131	131	131
INCOME	0.41809	0.15243	-0.05512	-0.09598	0.16061
	0.0047	0.3175	0.4943	0.2333	0.0452
	44	45	156	156	156
WHITE	0.57104	0.24899	0.08085	-0.11586	0.07507
	0.0001	0.0952	0.3126	0.1471	0.3485
	44	46	158	158	158
COLLEGE	0.46139	0.26385	0.00846	-0.10525	0.13067
	0.0016	0.0764	0.9163	0.1896	0.1028
	44	46	157	157	157
HSGRAD	0.42612	0.00720	-0.04047	-0.06713	0.13243
	0.0039	0.9621	0.6148	0.4035	0.0982
	44	46	157	157	157
DEFCOST2	-0.04039	0.20500	0.32963	-0.20866	-0.10390
	0.7946	0.1669	0.0001	0.0144	0.2270
	44	47	137	137	137
PTAMEM2	0.38255	0.18857	0.13752	0.08821	-0.20424
	0.0104	0.5373	0.3734	0.5691	0.1836
	44	13	44	44	44

CORRELATION ANALYSIS

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0
/ Number of Observations

	BUDGET2	OPERATE2	D1	D2	D3
INVOLVE2	0.30311	0.07245	0.06921	-0.04609	0.02559
	0.0455	0.6284	0.4216	0.5928	0.7666
	44	47	137	137	137
REPAIR2	-0.07394	0.39896	-0.08239	0.15710	-0.03637
	0.8619	0.0290	0.6651	0.4071	0.8487
	8	30	30	30	30
BUDGET2	1.00000	0.14437	-0.05110	0.05114	-0.00090
	0.0	0.6380	0.7418	0.7417	0.9954
	44	13	44	44	44
OPERATE2	0.14437	1.00000	-0.02148	0.15823	-0.14647
	0.6380	0.0	0.8860	0.2881	0.3259
	13	47	47	47	47
D1	-0.05110	-0.02148	1.00000	-0.60447	-0.22024
	0.7418	0.8860	0.0	0.0001	0.0051
	44	47	160	160	160
D2	0.05114	0.15823	-0.60447	1.00000	-0.53252
	0.7417	0.2881	0.0001	0.0	0.0001
	44	47	160	160	160
D3	-0.00090	-0.14647	-0.22024	-0.53252	1.00000
	0.9954	0.3259	0.0051	0.0001	0.0
	44	47	160	160	160

Appendix C
Regression Results for Alternatively Specified Models

This appendix contains the results from alternatively specified models. If two variables were found to be collinear, regression runs were not done. Since the first model was less clearly specified than the second, more alternatively specified models were run, to test, for example, different measures of parental involvement.

Model: MODEL1
Dependent Variable: DEFCOST

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Prob>F
Model	7	8.2338745E13	1.1762678E13	2.872	0.0177
Error	35	1.4336727E14	4.0962078E12		
C Total	42	2.2570602E14			

Root MSE	2023909.03998	R-square	0.3648
Dep Mean	1067009.25581	Adj R-sq	0.2378
C.V.	189.68055		

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob > |T|
INTERCEP	1	-2158093	1761928.0072	-1.225	0.2288
TYPE	1	-1185514	957303.40859	-1.238	0.2238
AGE	1	11101	10111.529171	1.098	0.2797
WHITE	1	-19977	14794.350876	-1.350	0.1856
INCOME	1	154.409536	64.12436415	2.408	0.0214
ENROLL	1	2522.572633	1453.3881430	1.736	0.0914
PTAMEM2	1	44937	1221104.7114	0.037	0.9709
BUDGET2	1	-1444.884582	5557.8638670	-0.260	0.7964

Model: MODEL1
Dependent Variable: DEFCOST

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Prob>F
Model	5	4.0390583E13	8.0781167E12	4.075	0.0018
Error	125	2.4777529E14	1.9822023E12		
C Total	130	2.8816587E14			

Root MSE	1407907.06805	R-square	0.1402
Dep Mean	756021.77099	Adj R-sq	0.1058
C.V.	186.22573		

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob > |T|
INTERCEP	1	19425	570099.73752	0.034	0.9729
TYPE	1	-700687	316286.10586	-2.215	0.0285
AGE	1	10053	4697.6743506	2.140	0.0343
WHITE	1	-11400	5523.5954621	-2.064	0.0411
INCOME	1	35.777513	21.42344730	1.670	0.0974
ENROLL	1	562.060782	433.71121056	1.296	0.1974

Model: MODEL1
Dependent Variable: CONDIT

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Prob>F
Model	7	2.11785	0.30255	2.020	0.1056
Error	19	2.84512	0.14974		
C Total	26	4.96296			

Root MSE	0.38697	R-square	0.4267
Dep Mean	1.96296	Adj R-sq	0.2155
C.V.	19.71338		

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob > |T|
INTERCEP	1	3.197429	0.61228424	5.222	0.0001
TYPE	1	-0.477040	0.24982502	-1.909	0.0714
AGE	1	0.001161	0.00240925	0.482	0.6354
WHITE	1	0.001825	0.00544073	0.335	0.7410
INCOME	1	-0.000028565	0.00001195	-2.391	0.0273
ENROLL	1	-0.000591	0.00050275	-1.175	0.2543
OPERATE2	1	0.026263	0.20974676	0.125	0.9017
REPAIR2	1	-0.001399	0.00096964	-1.443	0.1653

Model: MODEL1
Dependent Variable: CONDIT

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Prob>F
Model	8	7.33902	0.91738	2.945	0.0134
Error	33	10.28002	0.31152		
C Total	41	17.61905			

Root MSE	0.55814	R-square	0.4165
Dep Mean	1.90476	Adj R-sq	0.2751
C.V.	29.30215		

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob > |T|
INTERCEP	1	1.780528	0.50301264	3.540	0.0012
TYPE	1	-0.270467	0.29058594	-0.931	0.3587
AGE	1	0.004584	0.00284346	1.612	0.1165
WHITE	1	0.012215	0.01049875	1.163	0.2530
INCOME	1	0.000028989	0.00001843	1.573	0.1252
ENROLL	1	-0.000792	0.00045795	-1.730	0.0930
PTAMEM2	1	0.343472	0.34015302	1.010	0.3200
BUDGET2	1	-0.003441	0.00164384	-2.093	0.0441
COLLEGE	1	-0.013787	0.01606371	-0.858	0.3969

Model: MODEL1
Dependent Variable: CONDIT

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Prob>F
Model	6	6.91144	1.15191	3.494	0.0032
Error	121	39.89325	0.32970		
C Total	127	46.80469			

Root MSE	0.57419	R-square	0.1477
Dep Mean	2.03906	Adj R-sq	0.1054
C.V.	28.15960		

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob > |T|
INTERCEP	1	2.662602	0.23840665	11.168	0.0001
TYPE	1	-0.350916	0.12990384	-2.701	0.0079
AGE	1	0.003462	0.00192726	1.797	0.0749
WHITE	1	0.006038	0.00478665	1.261	0.2096
INCOME	1	-0.000011700	0.00001013	-1.155	0.2505
ENROLL	1	-0.000511	0.00018410	-2.778	0.0063
COLLEGE	1	-0.008293	0.00826187	-1.004	0.3175

Model: MODEL1
Dependent Variable: CONDIT

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Prob>F
Model	6	6.59059	1.09843	3.305	0.0048
Error	121	40.21410	0.33235		
C Total	127	46.80469			

Root MSE	0.57650	R-square	0.1408
Dep Mean	2.03906	Adj R-sq	0.0982
C.V.	28.27261		

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob > |T|
INTERCEP	1	2.691136	0.23778739	11.317	0.0001
TYPE	1	-0.361018	0.13059030	-2.765	0.0066
AGE	1	0.003343	0.00193413	1.728	0.0865
WHITE	1	0.001742	0.00231595	0.752	0.4534
INCOME	1	-0.000016676	0.00000886	-1.882	0.0622
ENROLL	1	-0.000522	0.00018520	-2.820	0.0056
INVOLVE2	1	0.725763	3.92421323	0.185	0.8536

Model: MODEL1
Dependent Variable: CONDIT

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Prob>F
Model	6	5.98820	0.99803	3.003	0.0179
Error	35	11.63085	0.33231		
C Total	41	17.61905			

Root MSE	0.57646	R-square	0.3399
Dep Mean	1.90476	Adj R-sq	0.2267
C.V.	30.26432		

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob > |T|
INTERCEP	1	2.307822	0.59094860	3.905	0.0004
TYPE	1	-0.461616	0.27532043	-1.677	0.1025
AGE	1	0.005034	0.00289342	1.740	0.0907
WHITE	1	0.001486	0.00410471	0.362	0.7195
INCOME	1	0.000021977	0.00001830	1.201	0.2378
ENROLL	1	-0.001097	0.00040904	-2.681	0.0111
RATING	1	-0.088560	0.21689262	-0.408	0.6855

Model: MODEL1
Dependent Variable: SCORE

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Prob>F
Model	7	10760.92764	1537.27538	8.591	0.0001
Error	99	17715.24845	178.94190		
C Total	106	28476.17609			

Root MSE	13.37692	R-square	0.3779
Dep Mean	50.27860	Adj R-sq	0.3339
C.V.	26.60559		

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob > |T|
INTERCEP	1	47.807262	8.22286474	5.814	0.0001
TYPE	1	5.277915	3.59112887	1.470	0.1448
AGE	1	0.064185	0.04945879	1.298	0.1974
WHITE	1	0.167104	0.06321900	2.643	0.0095
ENROLL	1	-0.008948	0.00463809	-1.929	0.0566
CONDIT	1	-5.472369	2.14804820	-2.548	0.0124
INCOME	1	0.000456	0.00023184	1.969	0.0518
UNIFORM	1	1.643857	3.47311669	0.473	0.6370

Model: MODEL1
Dependent Variable: SCORE

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Prob>F
Model	8	6685.98163	835.74770	7.905	0.0019
Error	10	1057.20994	105.72099		
C Total	18	7743.19157			

Root MSE	10.28207	R-square	0.8635
Dep Mean	50.68737	Adj R-sq	0.7542
C.V.	20.28527		

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob > |T|
INTERCEP	1	-2.927199	24.78585351	-0.118	0.9083
TYPE	1	7.622470	8.78694360	0.867	0.4060
AGE	1	0.228410	0.13775658	1.658	0.1283
WHITE	1	0.270764	0.10688750	2.533	0.0297
INCOME	1	0.000173	0.00048943	0.353	0.7314
ENROLL	1	0.045842	0.01869457	2.452	0.0341
CONDIT	1	-3.856106	5.17344869	-0.745	0.4732
PTAMEM2	1	36.131402	10.65892554	3.390	0.0069
BUDGET2	1	0.018383	0.03646112	0.504	0.6251

Model: MODEL1
Dependent Variable: CONDIT

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Prob>F
Model	7	4.93881	0.70554	2.111	0.1221
Error	12	4.01119	0.33427		
C Total	19	8.95000			

Root MSE	0.57816	R-square	0.5518
Dep Mean	2.05000	Adj R-sq	0.2904
C.V.	28.20279		

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob > |T|
INTERCEP	1	3.153596	0.93897528	3.359	0.0057
TYPE	1	-0.399001	0.36211335	-1.102	0.2921
AGE	1	-0.006474	0.00689627	-0.939	0.3664
WHITE	1	0.004883	0.00580590	0.841	0.4167
INCOME	1	0.000021829	0.00002626	0.831	0.4220
ENROLL	1	-0.001877	0.00077868	-2.410	0.0329
PTAMEM2	1	-0.264229	0.51987254	-0.508	0.6205
BUDGET2	1	-0.002485	0.00186733	-1.331	0.2081

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